

**FIG. 1**

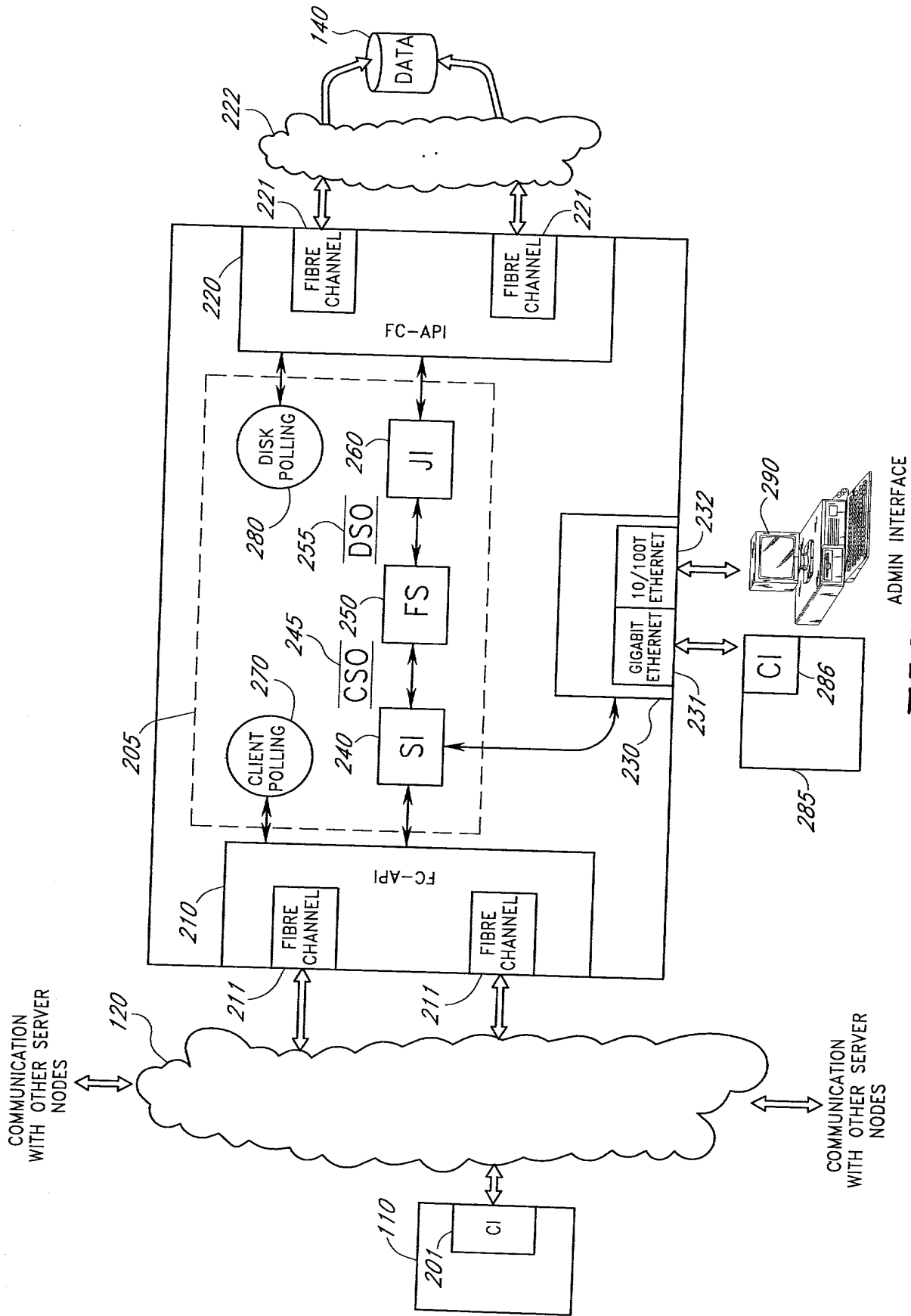


FIG.2

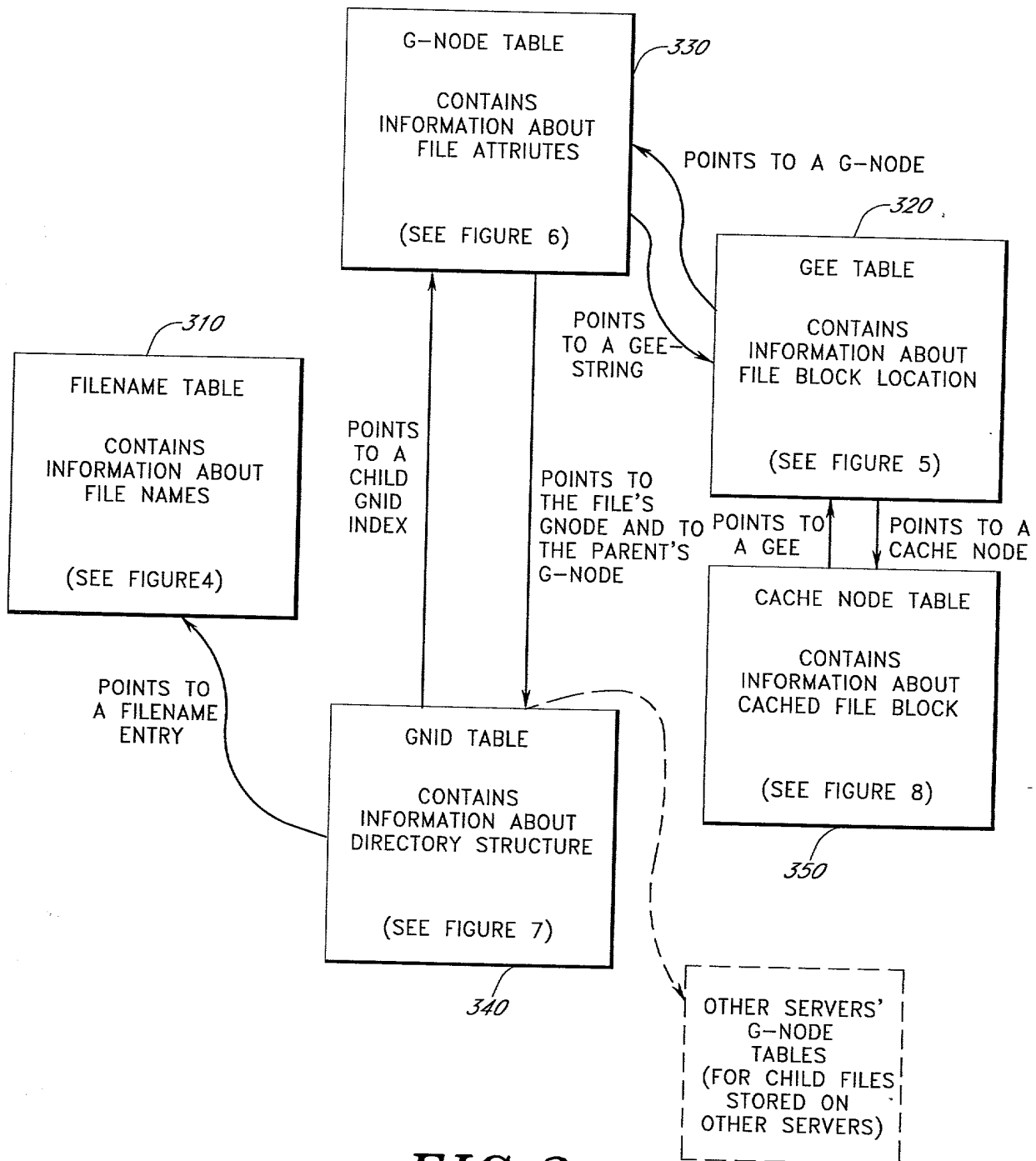


FIG. 3

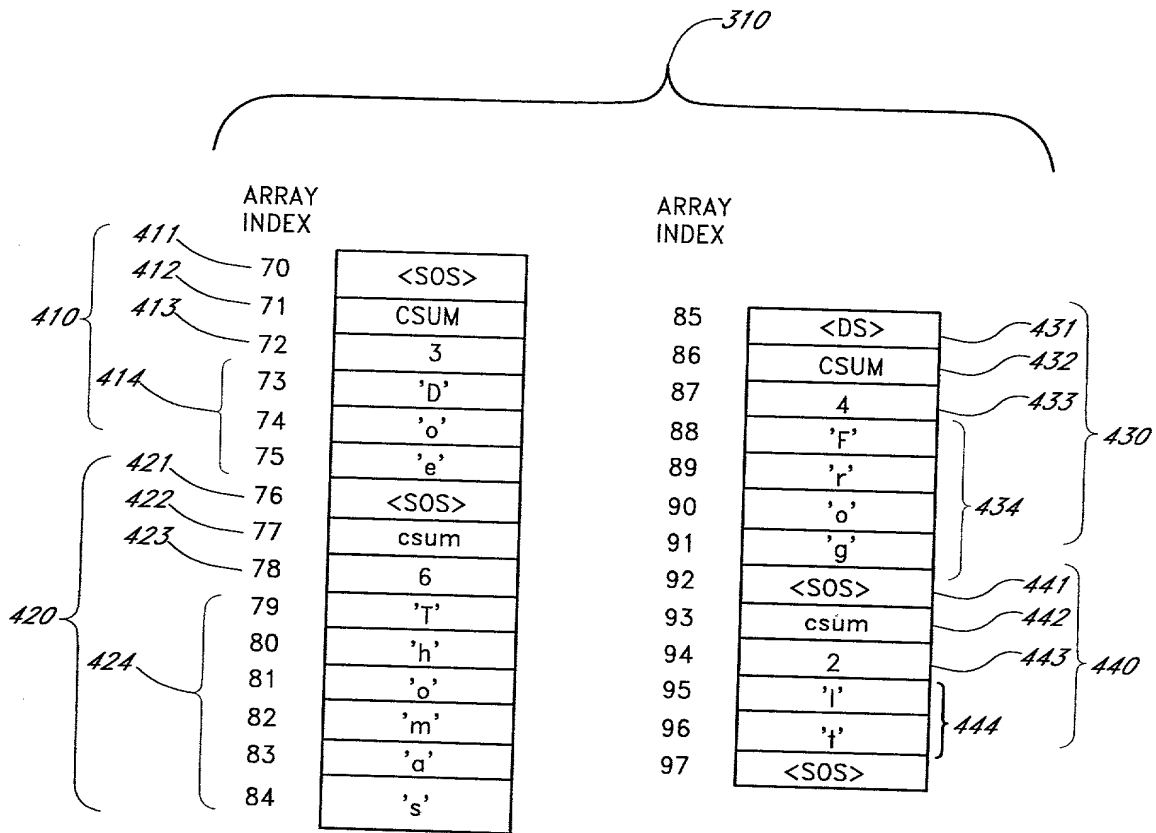
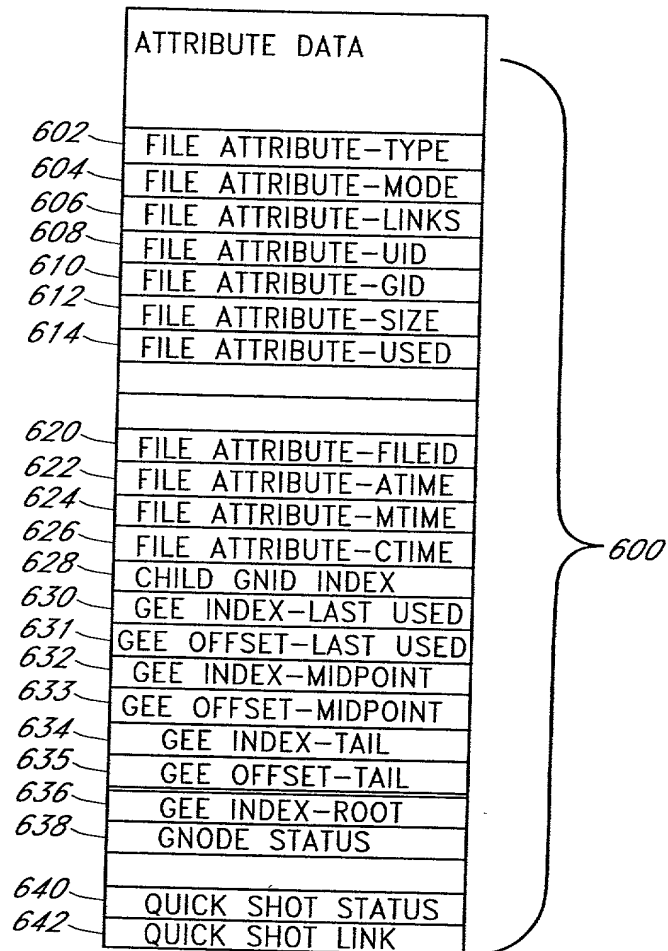


FIG. 4

INDEX	G-CODE	DATA	FILE LOGICAL BLOCK
45	GNODE	GNODE=67, EXTENT=2, ROOT=TRUE	
46	DATA	DISK LOGICAL BLOCKS: 456,457 DRIVE 13	1
47	DATA	DISK LOGICAL BLOCKS: 667,668 DRIVE 15	2
48	DATA	DISK LOGICAL BLOCKS: 112,113 DRIVE 19	3
49	PARITY	DISK LOGICAL BLOCKS: 554,555 DRIVE 2	
50	DATA	DISK LOGICAL BLOCKS: 458,459 DRIVE 13	4
51	DATA	DISK LOGICAL BLOCKS: 669,670 DRIVE 15	5
52	DATA	DISK LOGICAL BLOCKS: 119,120 DRIVE 19	6
53	PARITY	DISK LOGICAL BLOCKS: 556,557 DRIVE 2	
54	LINK	INDEX 76	
...	...	...	
76	GNODE	GNODE=67, EXTENT=3, ROOT=FALSE	
77	DATA	DISK LOGICAL BLOCKS: 460,461,462 DRIVE 13	7
78	DATA	DISK LOGICAL BLOCKS: 671,672,673 DRIVE 15	8
79	PARITY	DISK LOGICAL BLOCKS: 121,122,123 DRIVE 19	
80	LINK	INDEX 88	
...	...	...	
88	GNODE	GNODE=67, EXTENT=3, ROOT=FALSE	
89	DATA	DISK LOGICAL BLOCKS: 463,464,465 DRIVE 13	9
90	DATA	DISK LOGICAL BLOCKS: 674,675,676 DRIVE 15	10
91	PARITY	DISK LOGICAL BLOCKS: 124,125,126 DRIVE 19	
92	GNODE	GNODE=43, EXTENT=4, ROOT=FALSE	
...	...	...	

FIG.5

**FIG. 6**

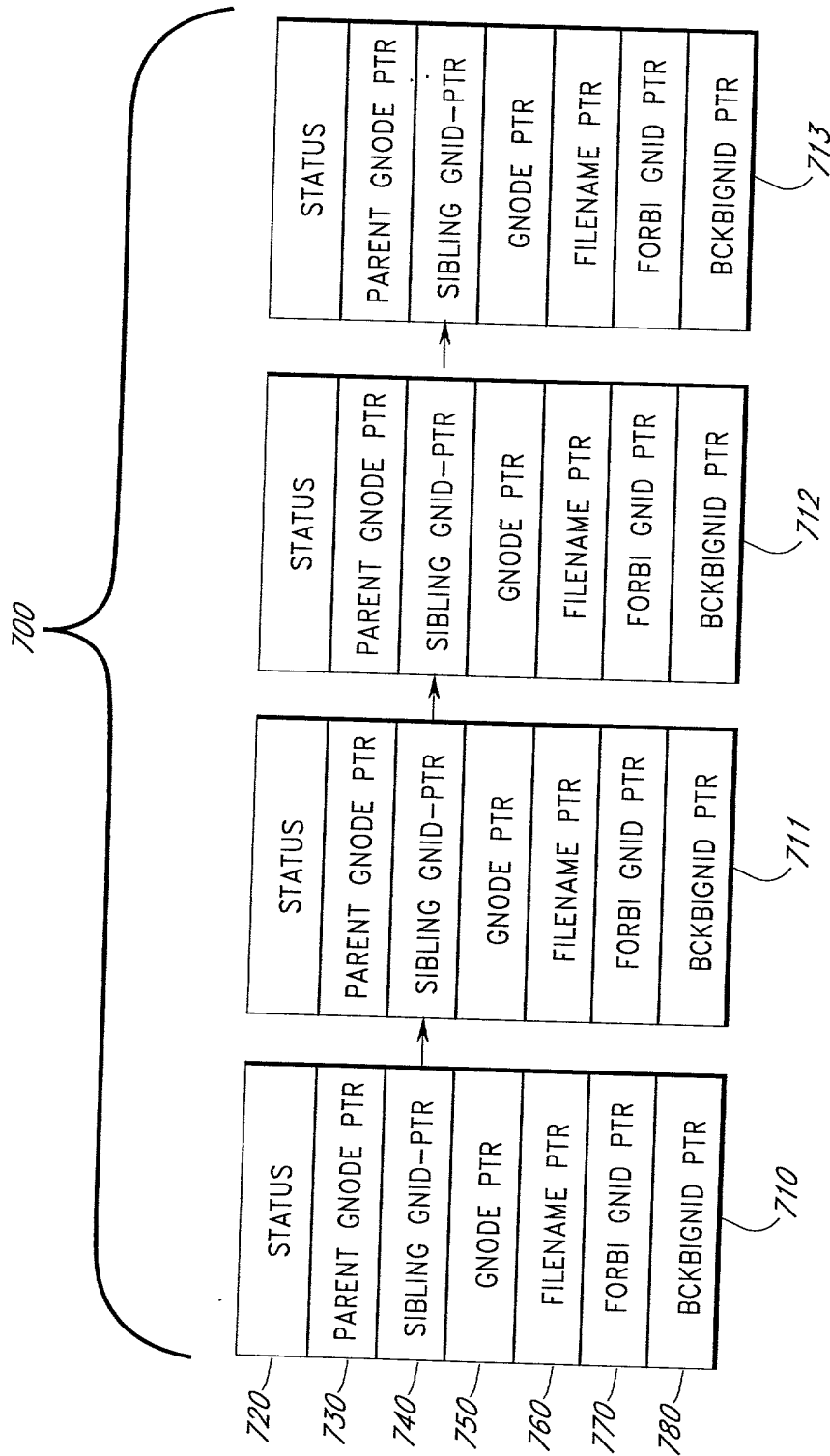
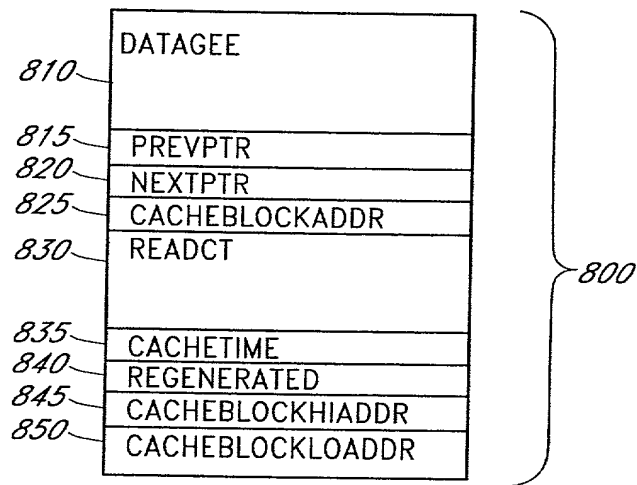


FIG. 7

**FIG. 8A**



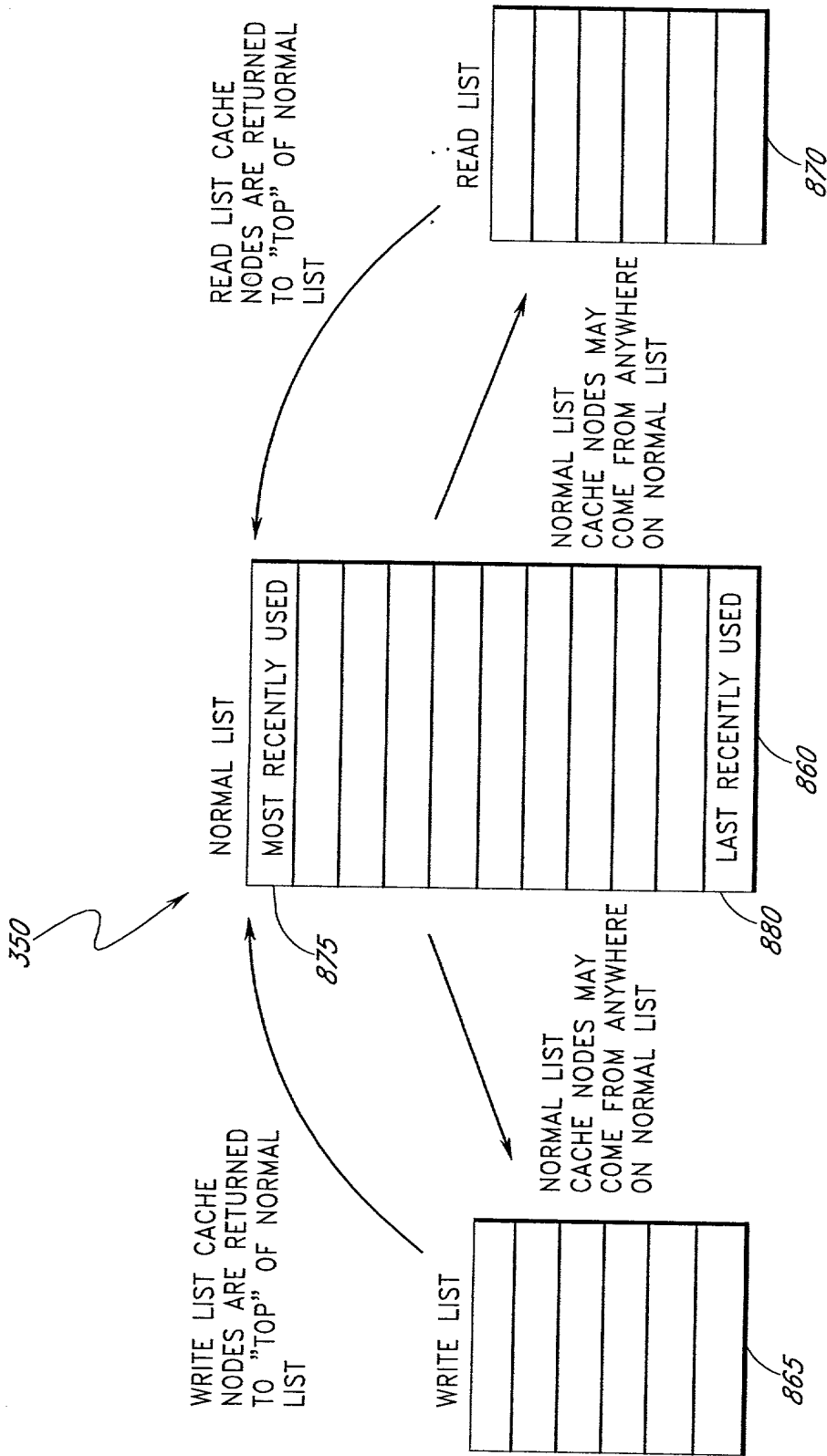


FIG. 8B

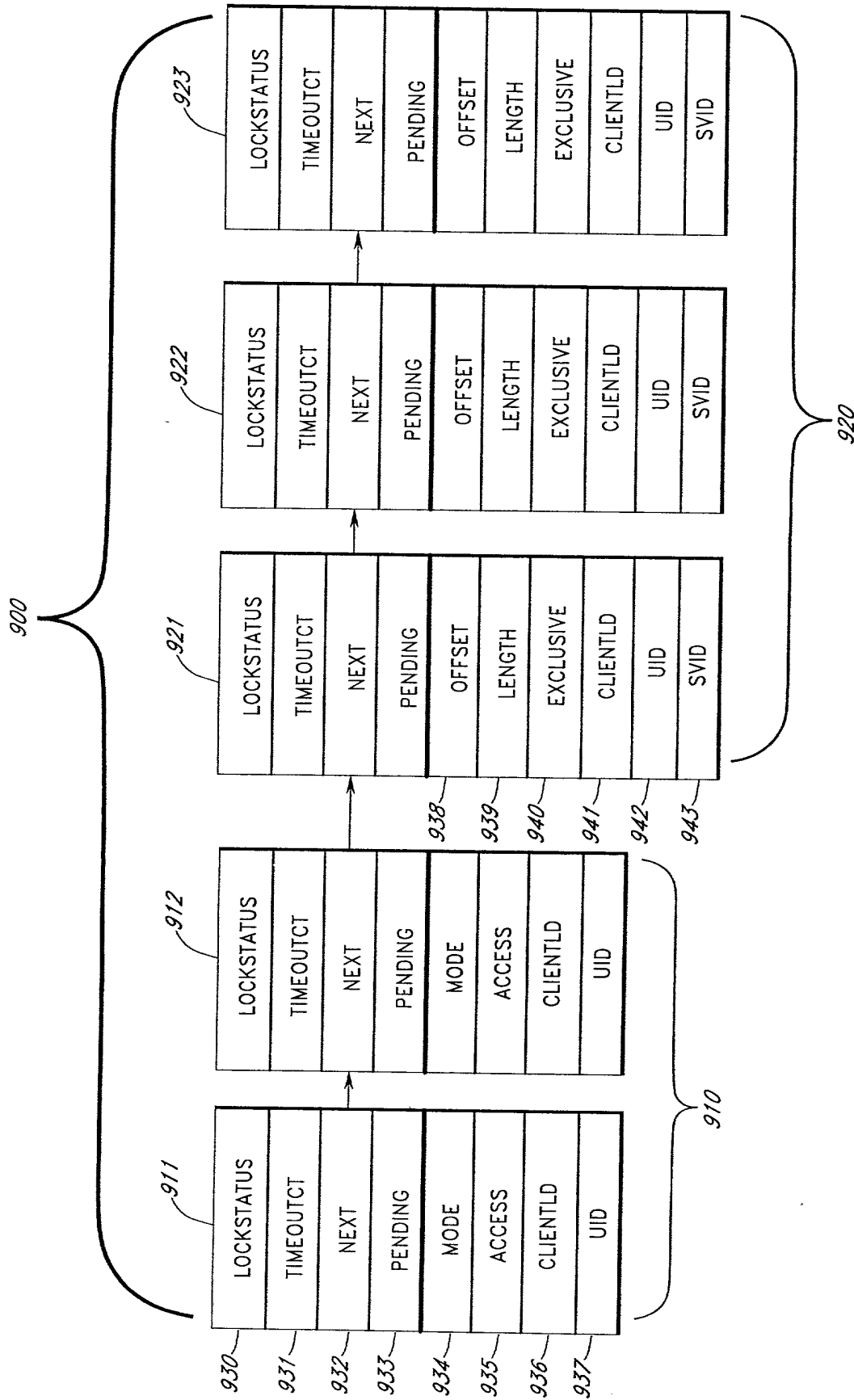


FIG. 9

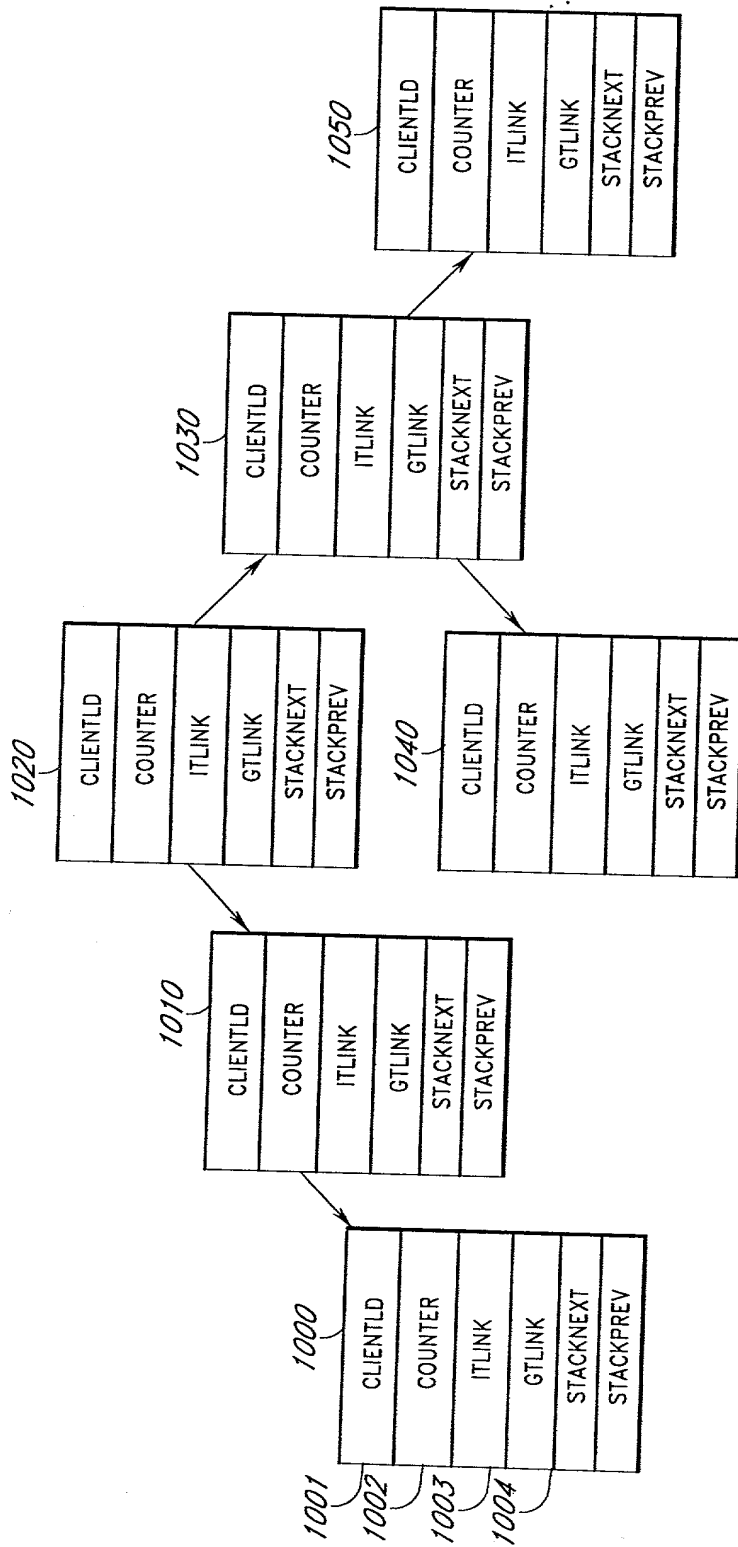


FIG. 10

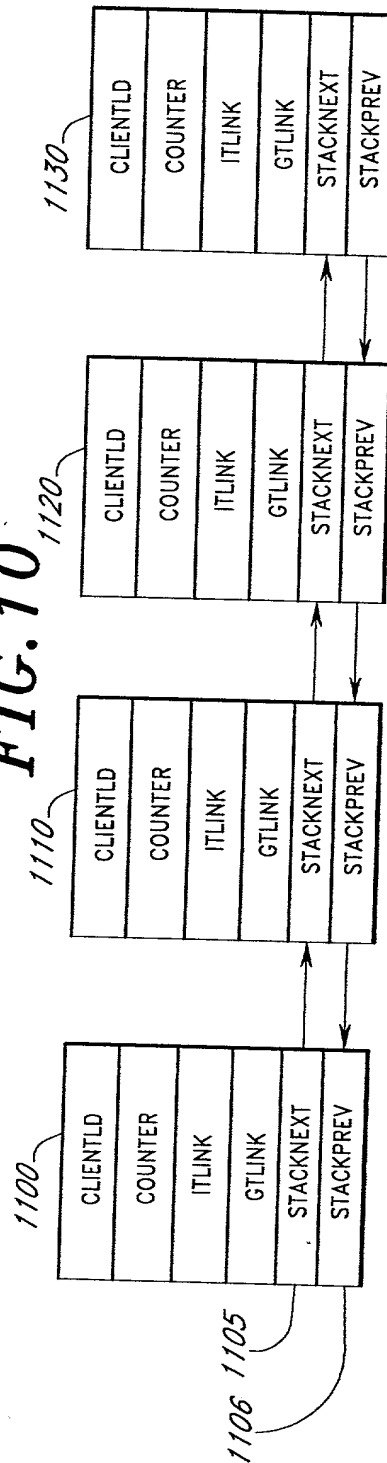
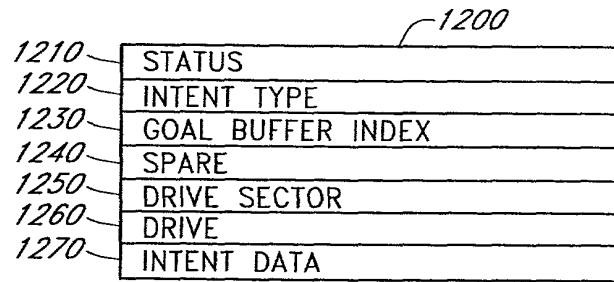
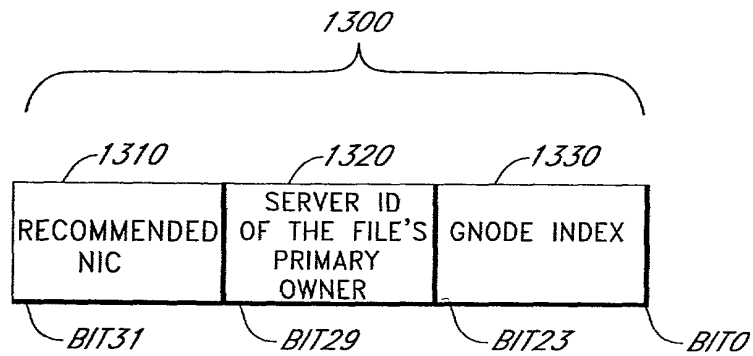


FIG. 11

**FIG. 12****FIG. 13**

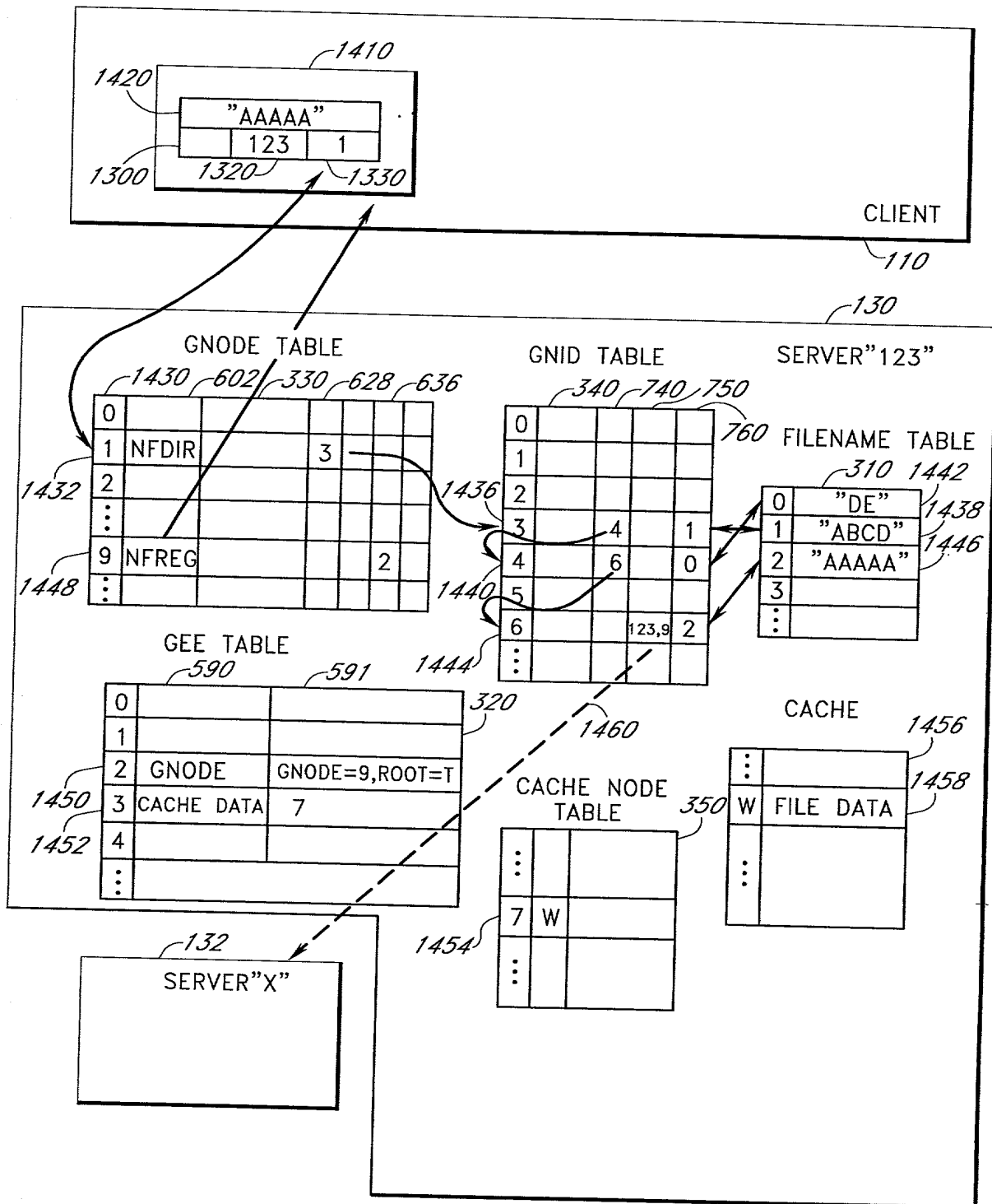


FIG. 14A

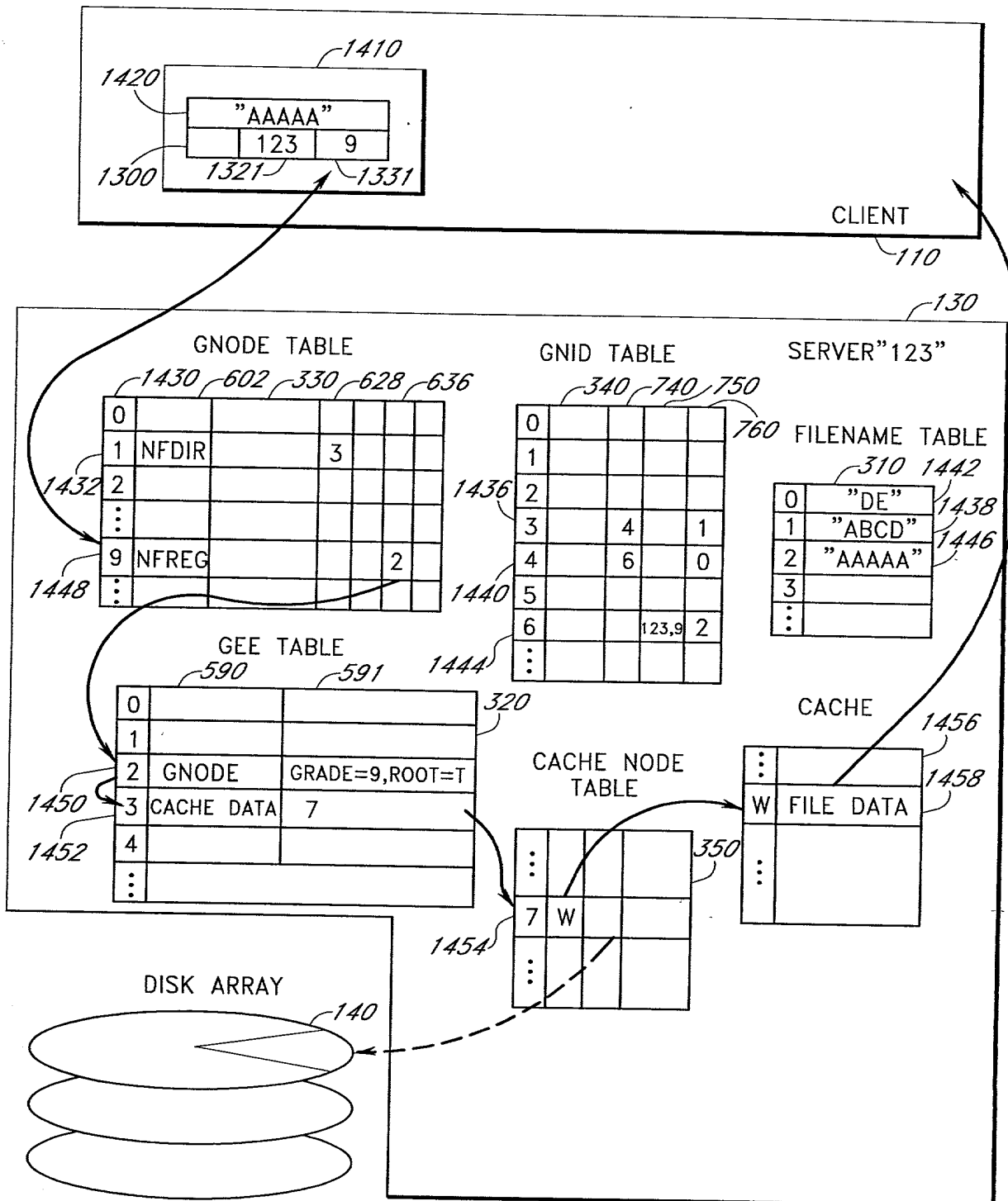


FIG. 14B

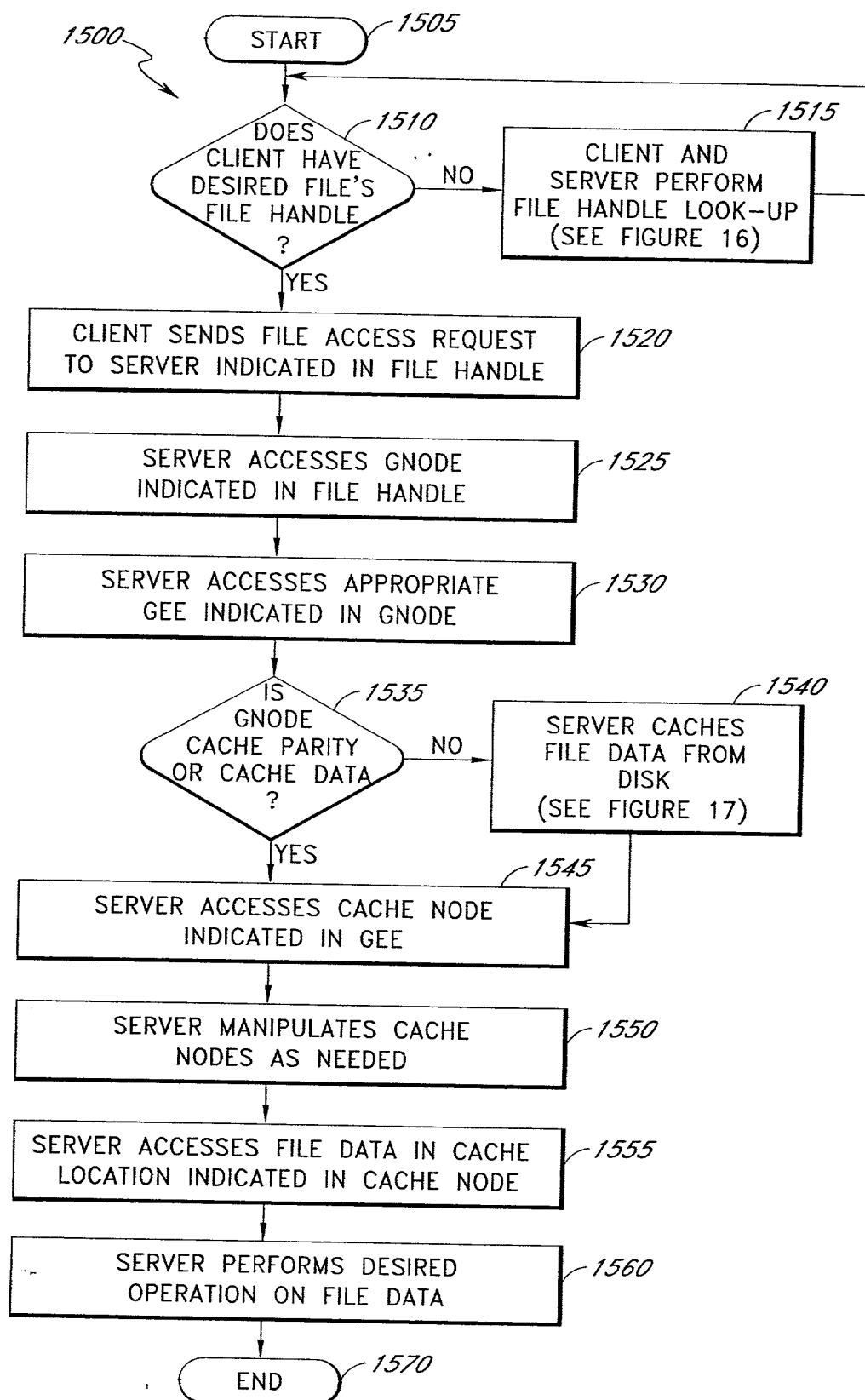


FIG. 15

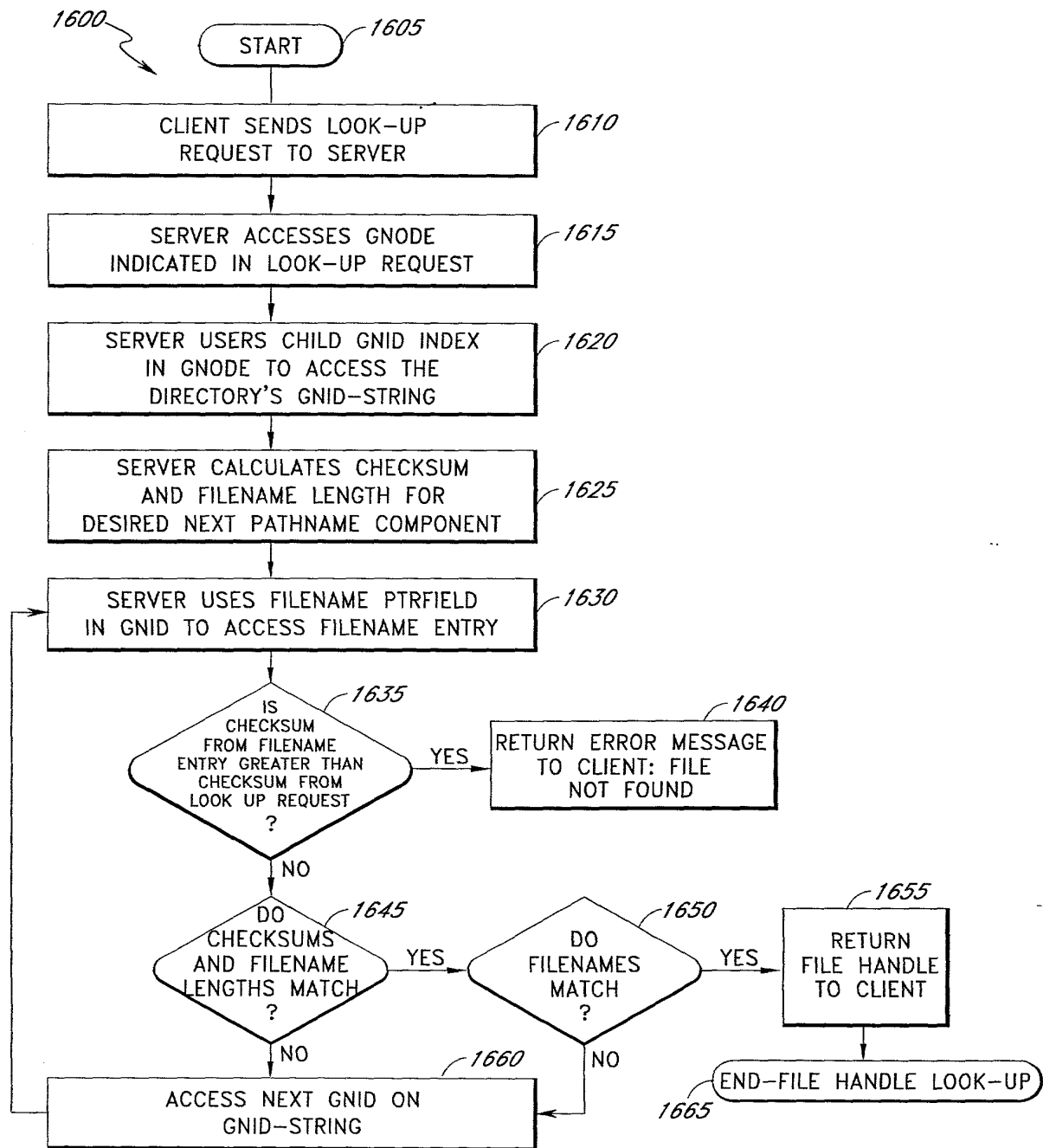
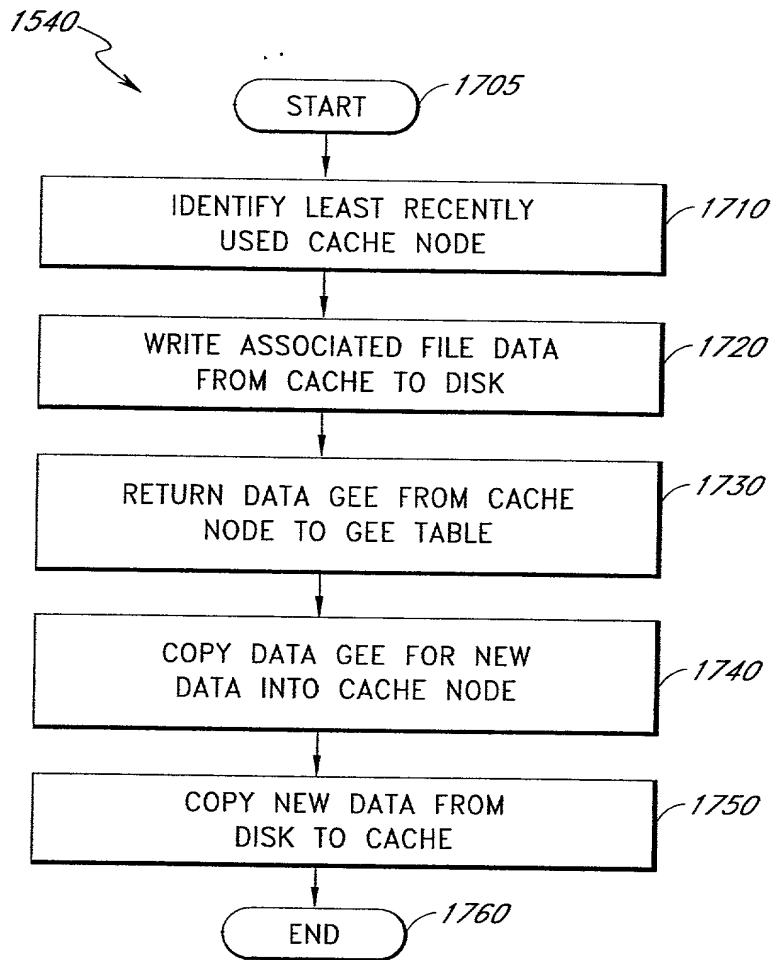


FIG. 16



**FIG. 17**

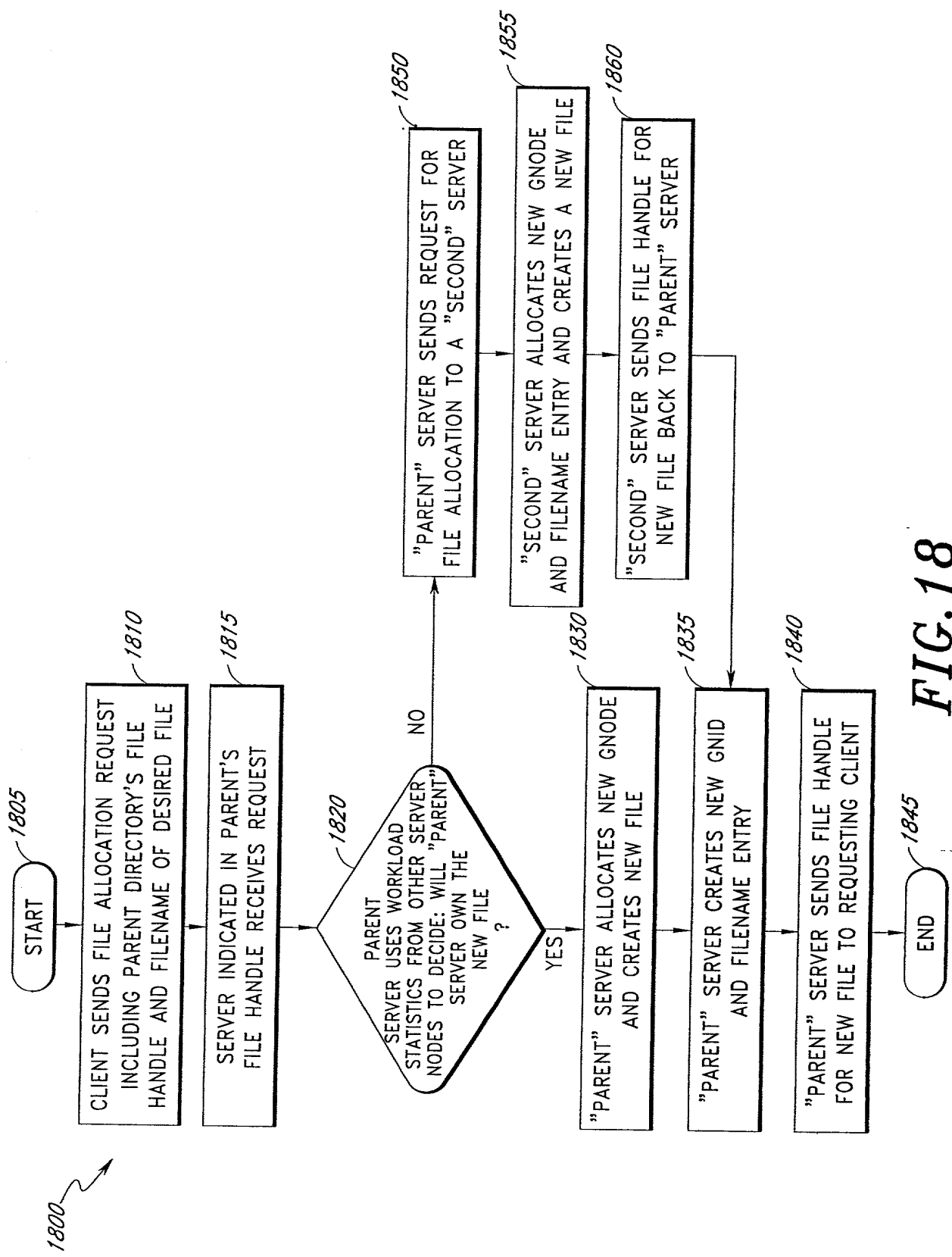
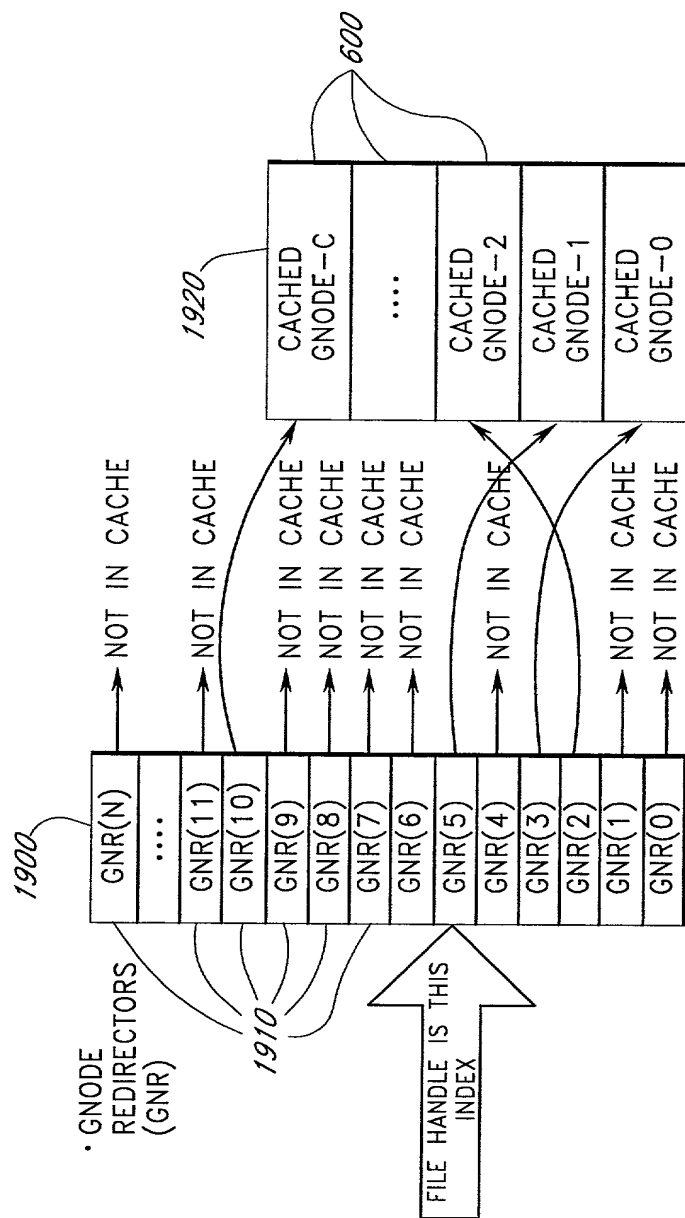
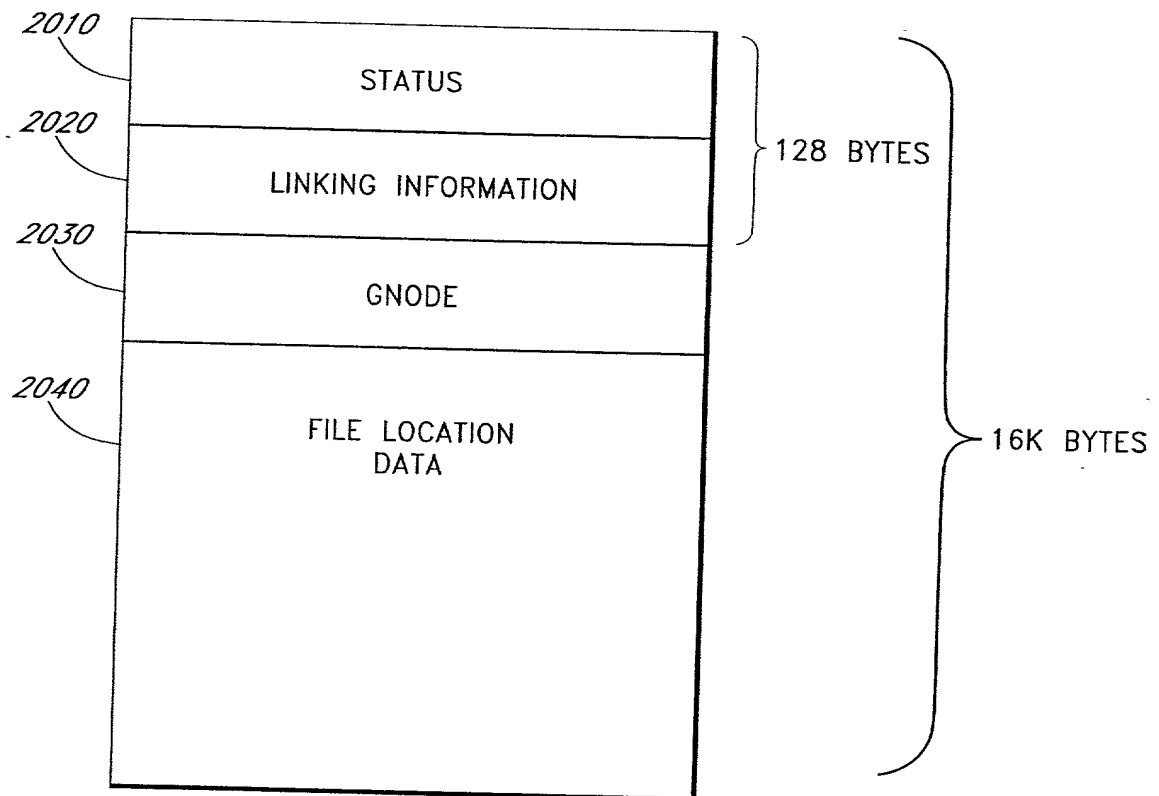


FIG. 18



**FIG. 19**

**FIG. 20A**

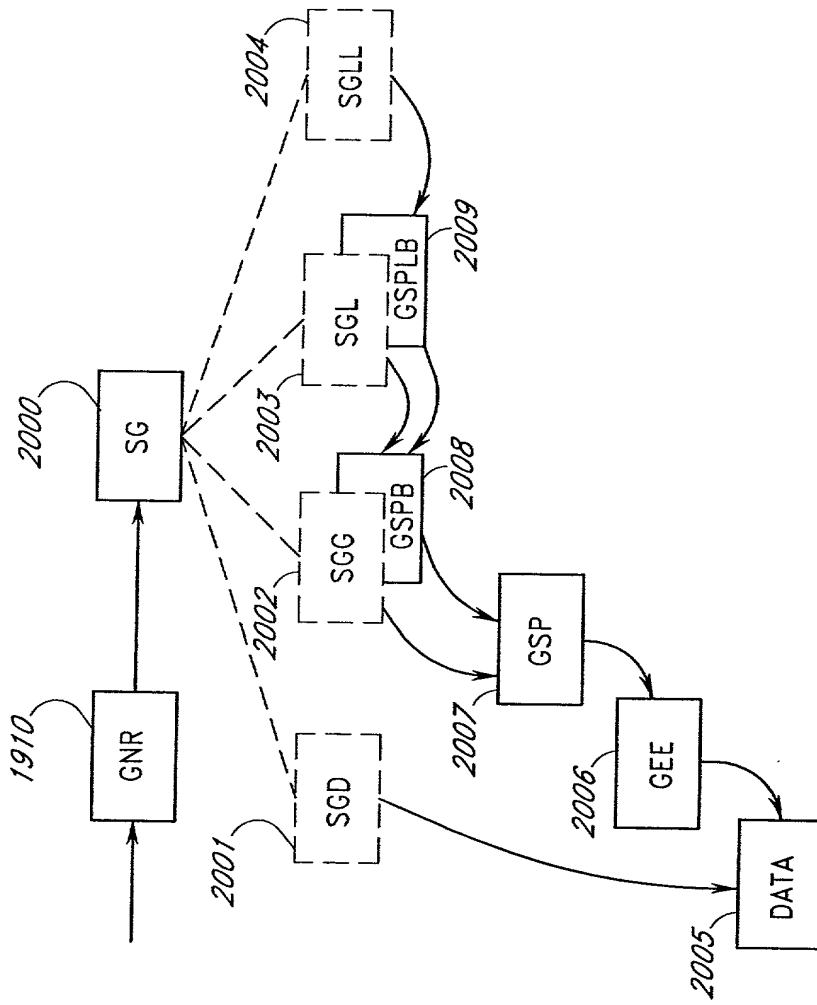


FIG.20B

CONVENTIONAL RAID MAPPING  
(PRIOR ART)

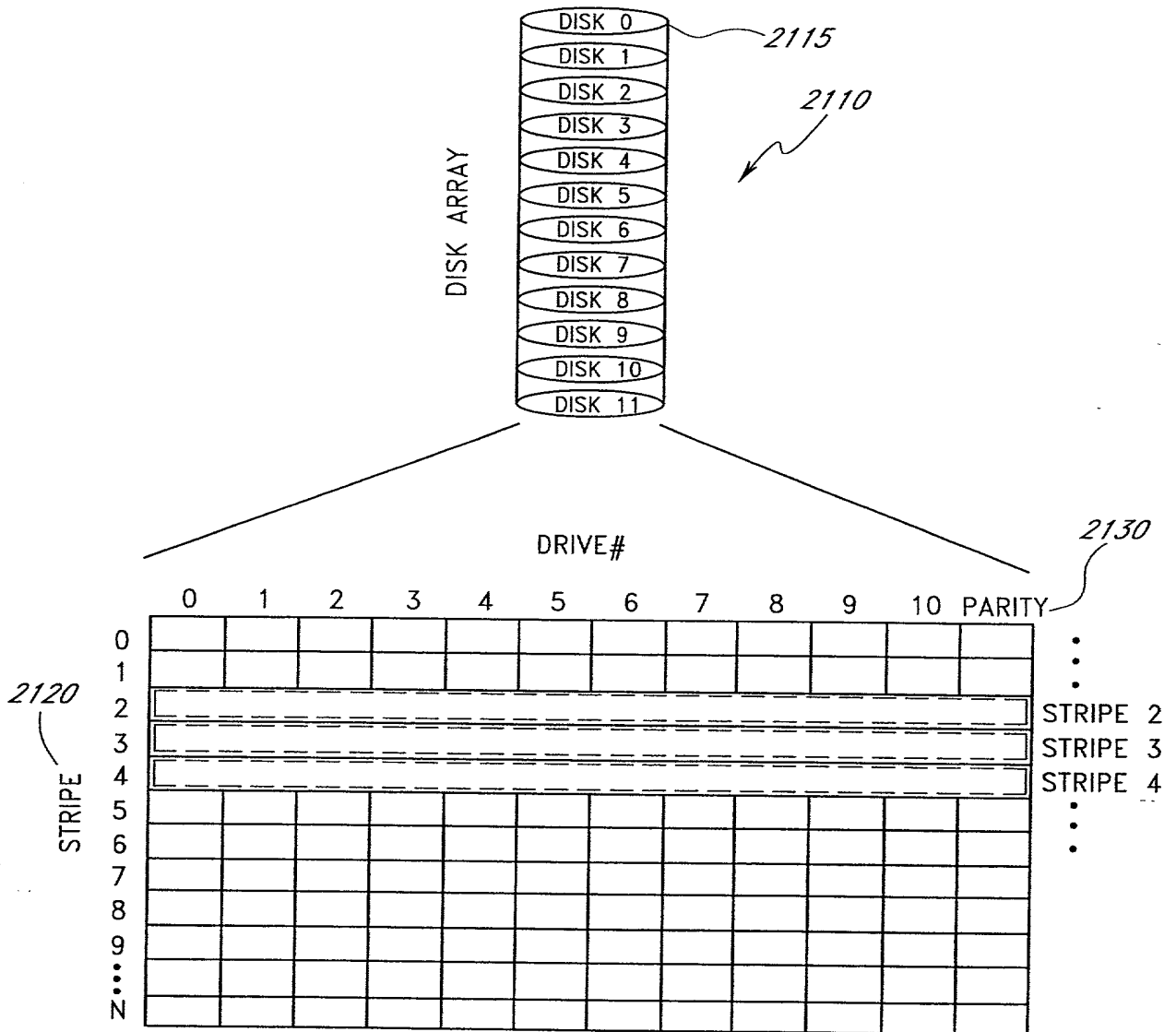
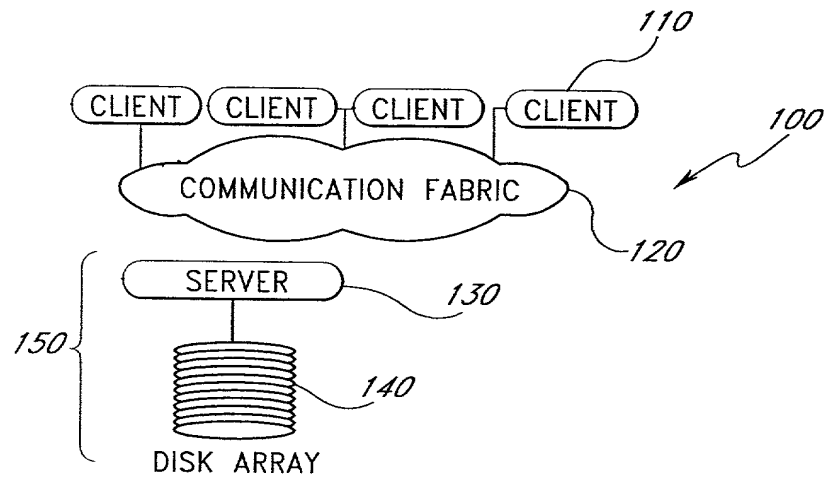
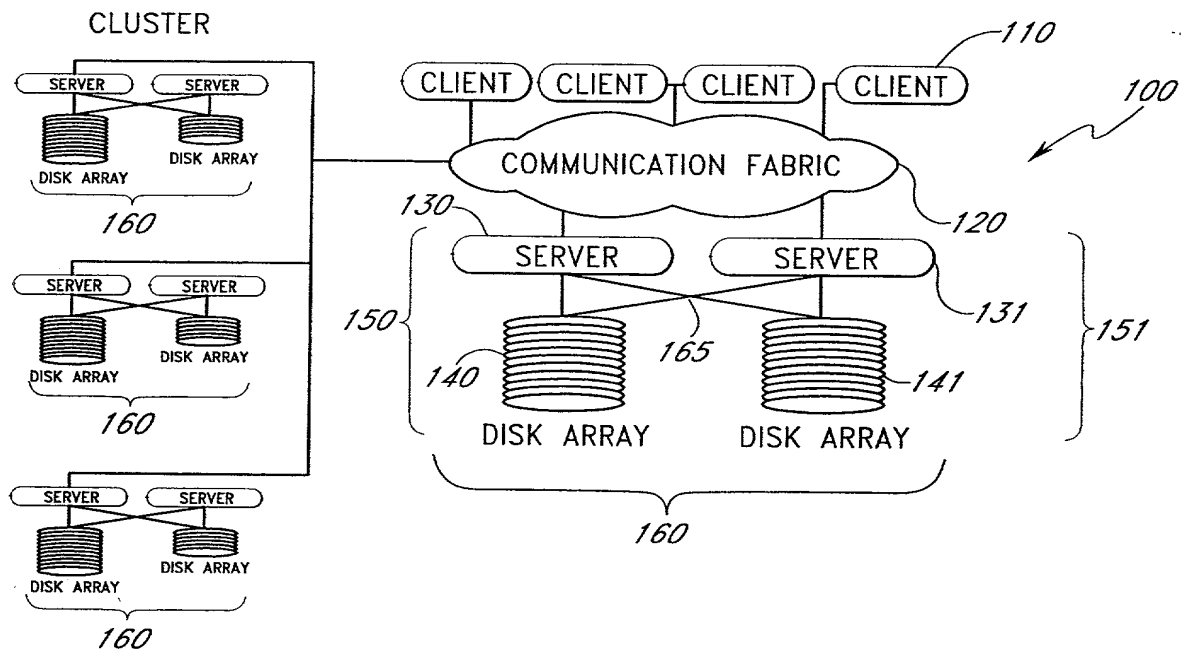


FIG.21

*FIG. 22A**FIG. 22B*

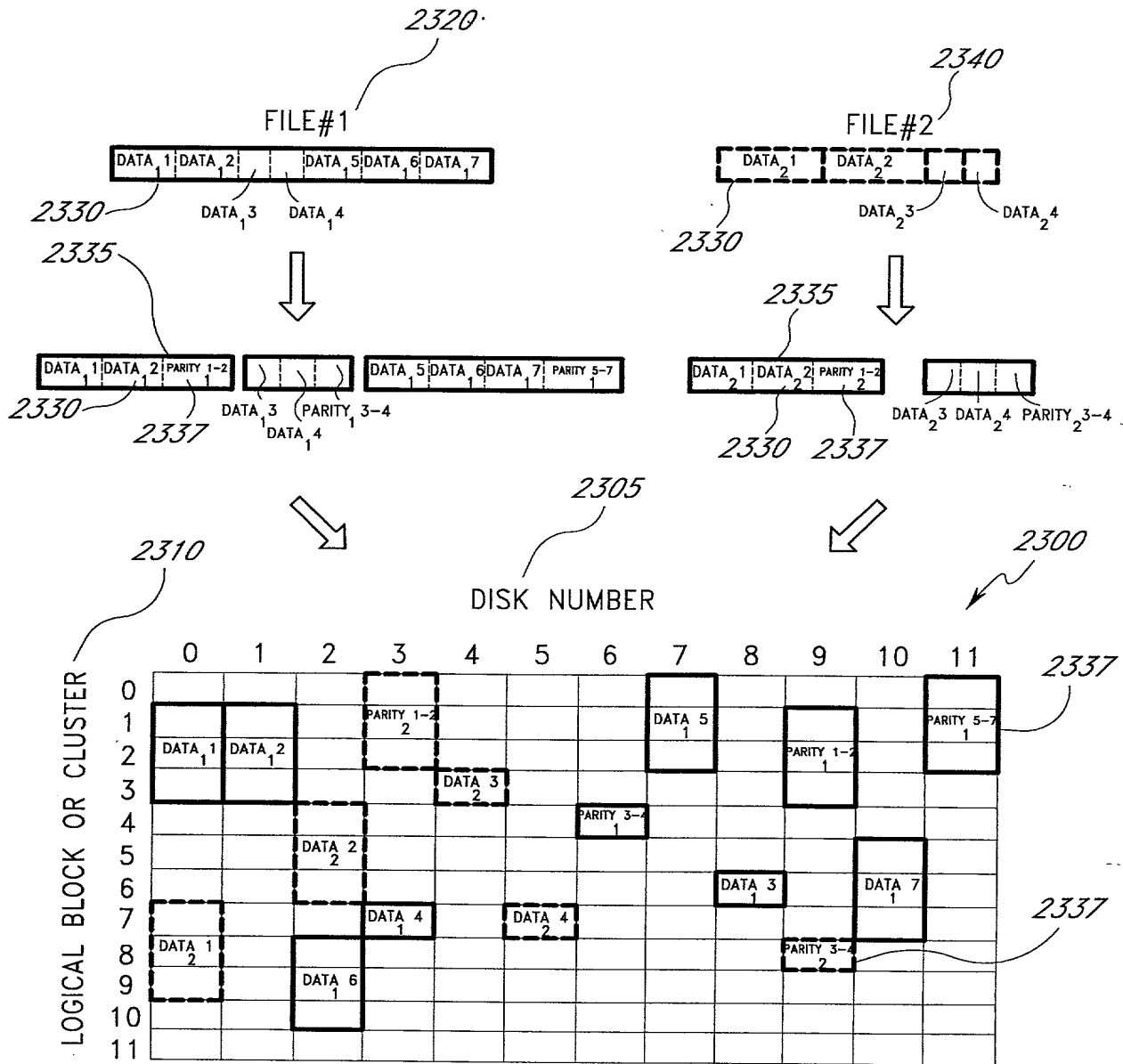
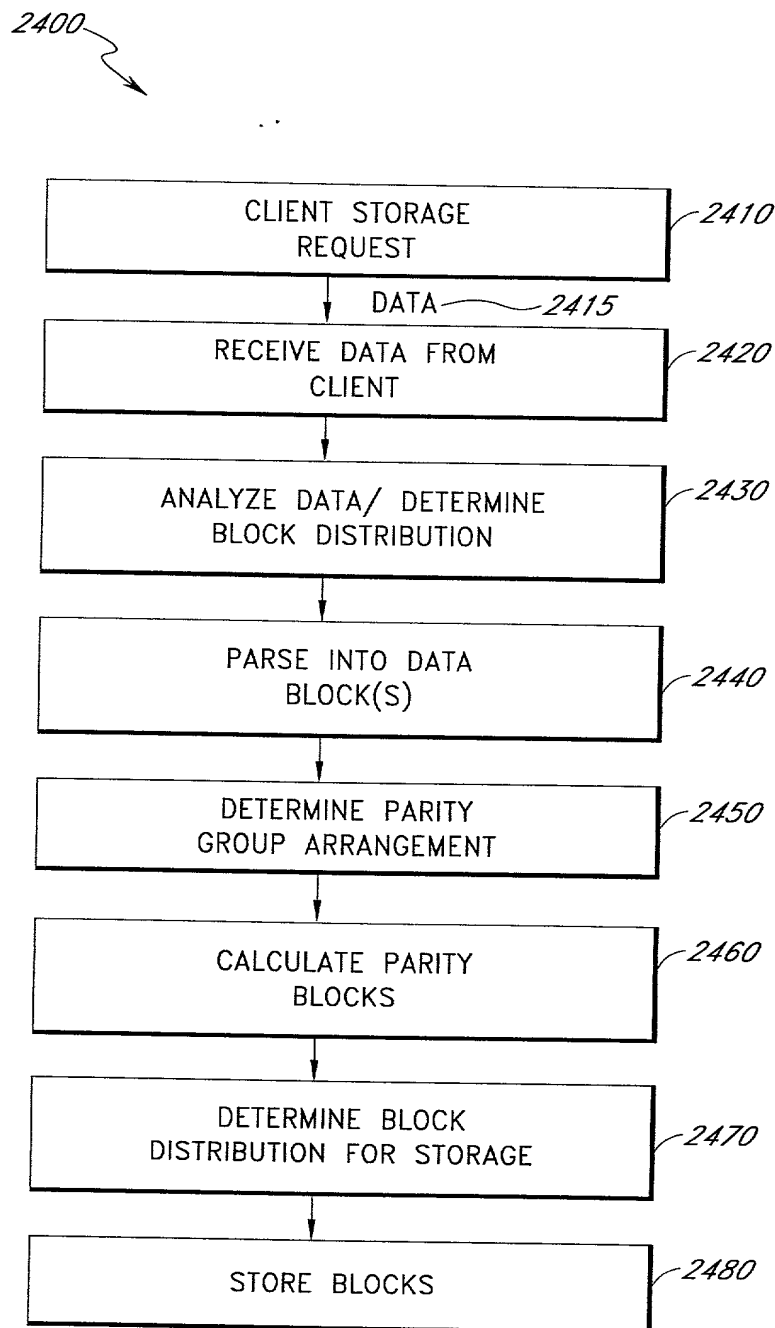
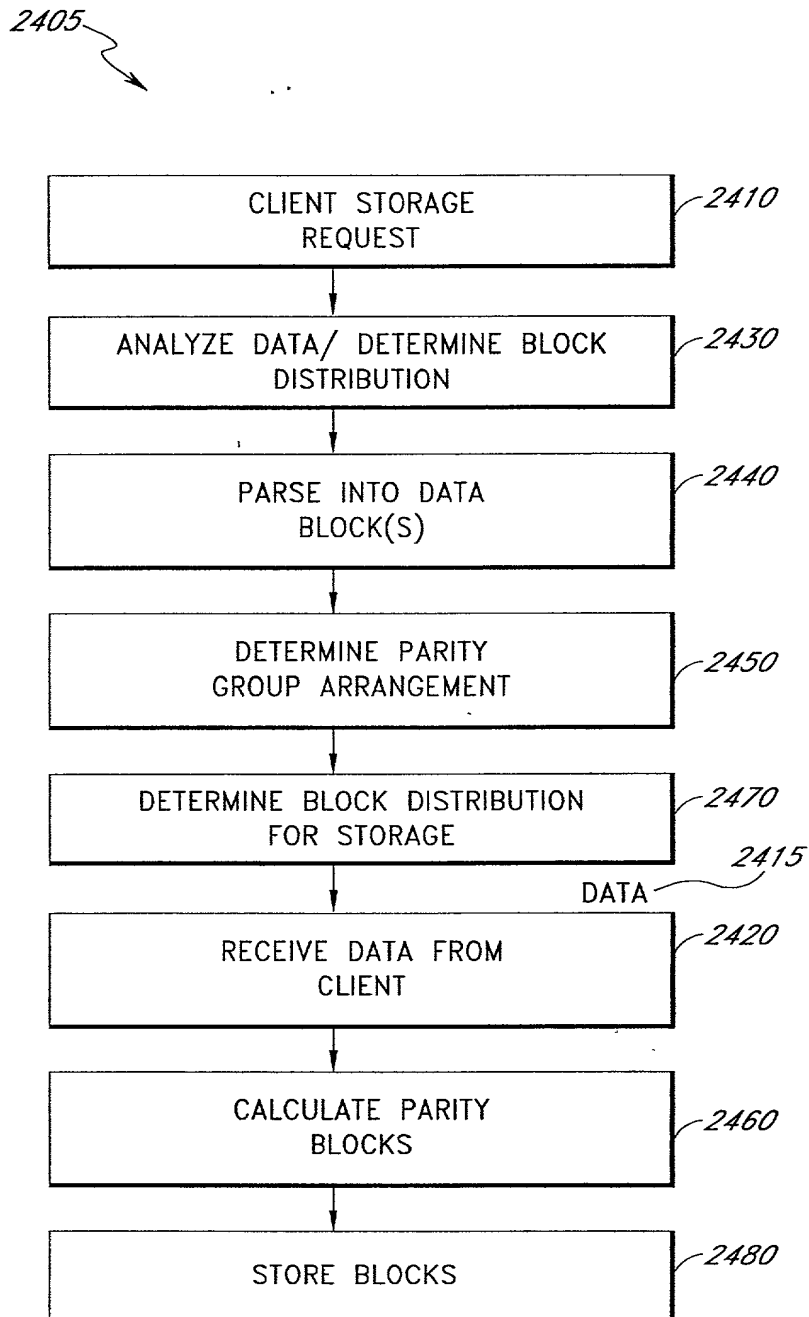


FIG. 23

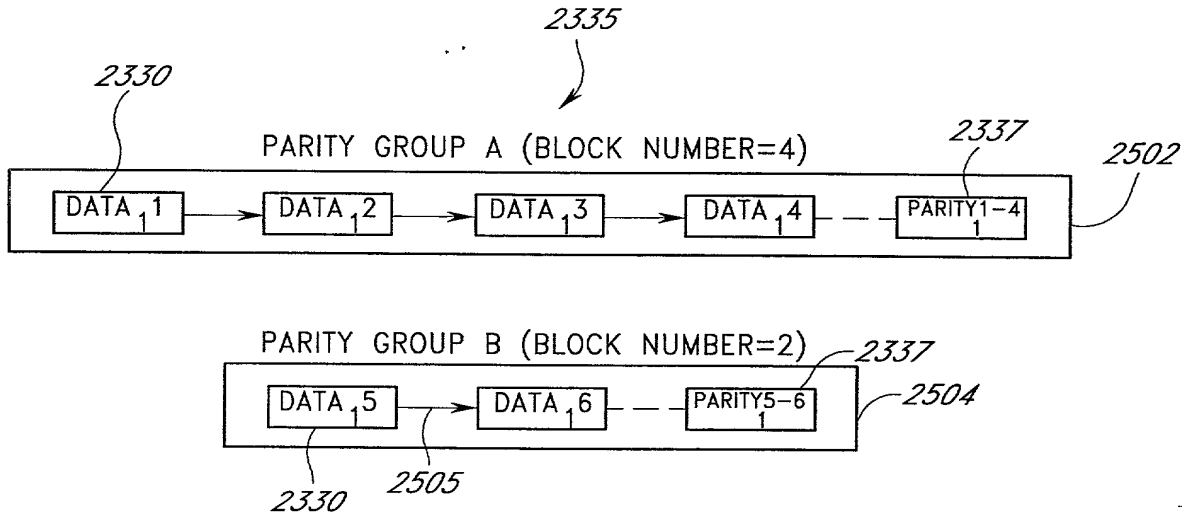
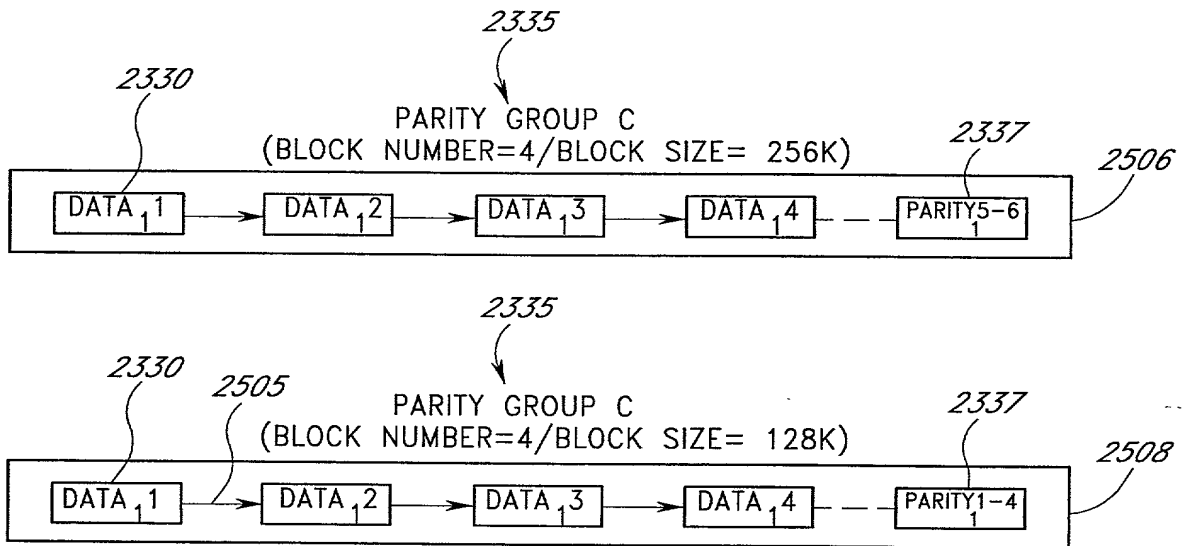


**FIG. 24A**

**FIG. 24B**



*FIG. 25*

**FIG. 26A****FIG. 26B**

DISK ARRAY INITIALIZATION USING GEE TABLE  
SPACE ALLOCATION

2530

2532 <u>INDEX</u>	2534 <u>G-CODE</u>	2536 <u>DATA</u>	2542
...	...	...	
45	GNODE	EXTENT=2	
46	DATA	BLOCKS 456,457:DRIVE 13	2540
47	DATA	BLOCKS 667,668:DRIVE 15	
48	DATA	BLOCKS 112,113:DRIVE 19	
49	PARITY	BLOCKS 554,555:DRIVE 2	
...	...	...	
76	GNODE	EXTENT=2	
77	DATA	BLOCKS 460,461,462:DRIVE 13	2540
78	DATA	BLOCKS 671,672,673:DRIVE 15	
79	PARITY	BLOCKS 121,122,123:DRIVE 19	
...	...	...	
88	GNODE	EXTENT=2	
89	DATA	BLOCKS 463,464,465:DRIVE 2	2540
90	DATA	BLOCKS 674,675,676:DRIVE 5	
91	PARITY	BLOCKS 124,125,126:DRIVE 13	
...	...	...	

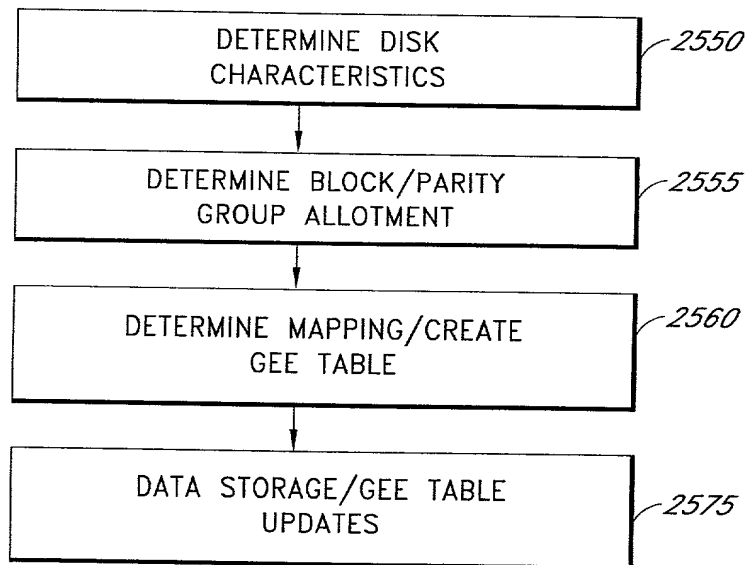
2538

2538

**FIG.27**

2448

## ARRAY PREPARATION/ G-TABLE FORMATTING

**FIG.28**

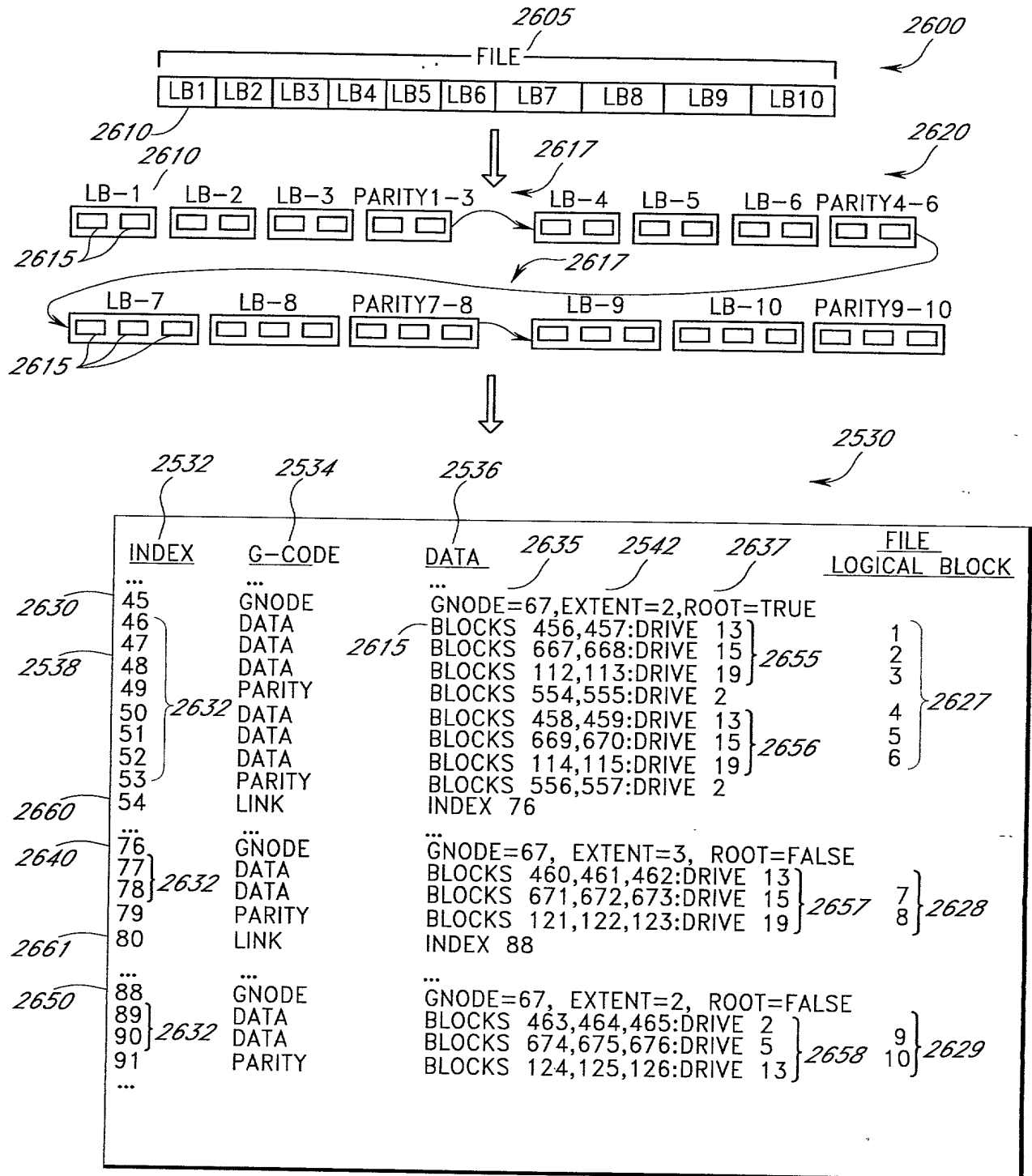


FIG. 29

## DRIVE FAILURE RECOVERY MECHANISM

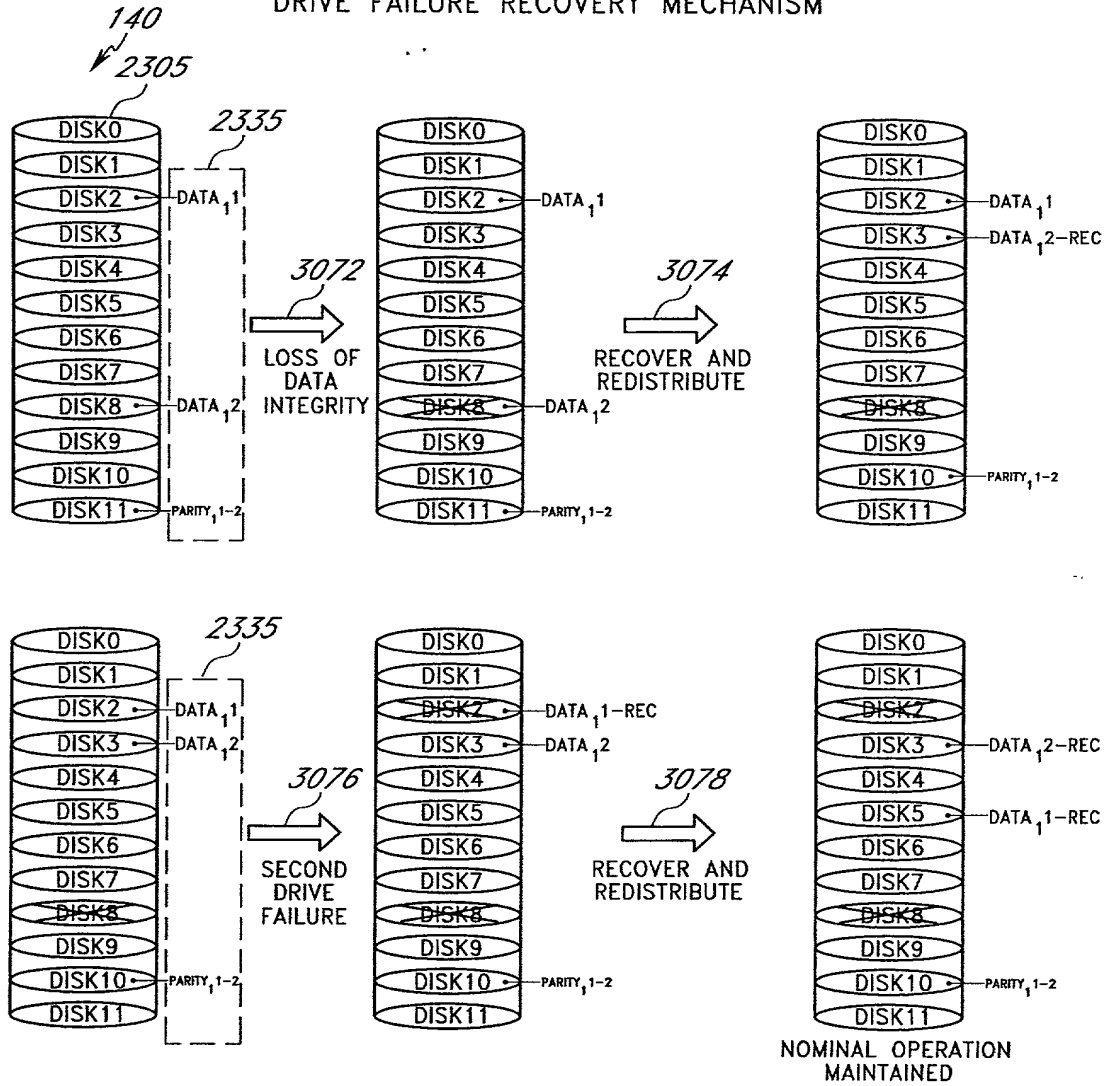


FIG.30



3172

## DATA RECOVERY PROCESS

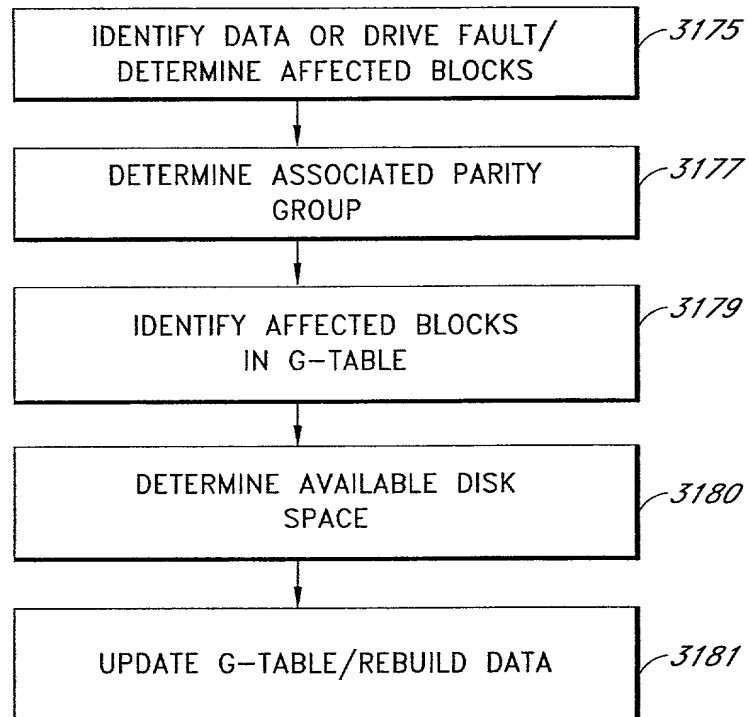
**FIG.31**

FIG. 32A

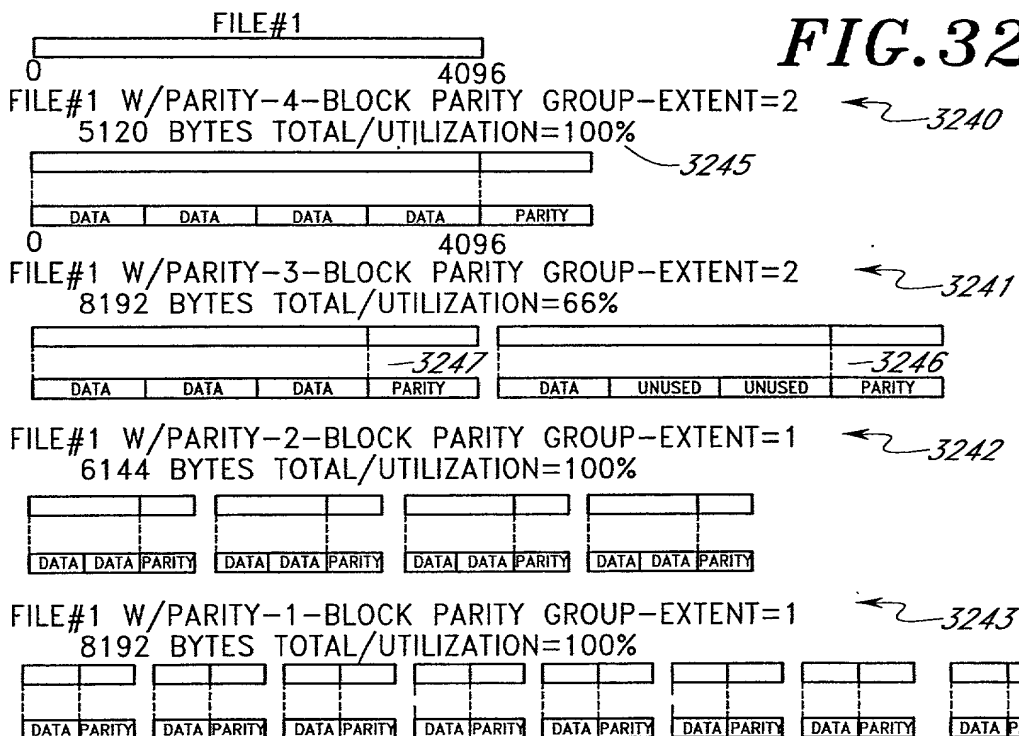
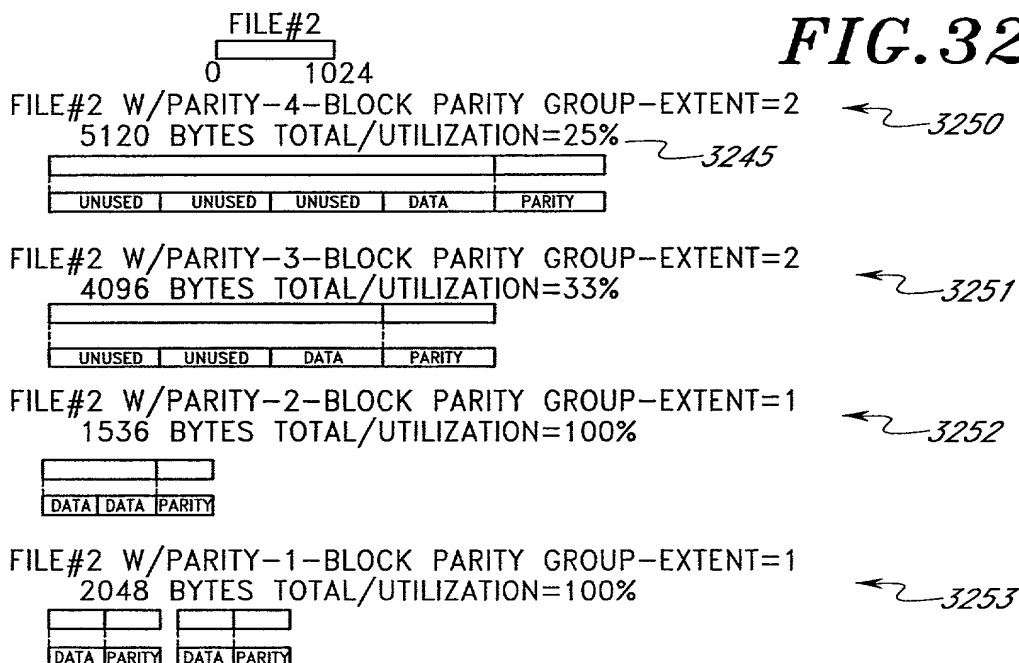
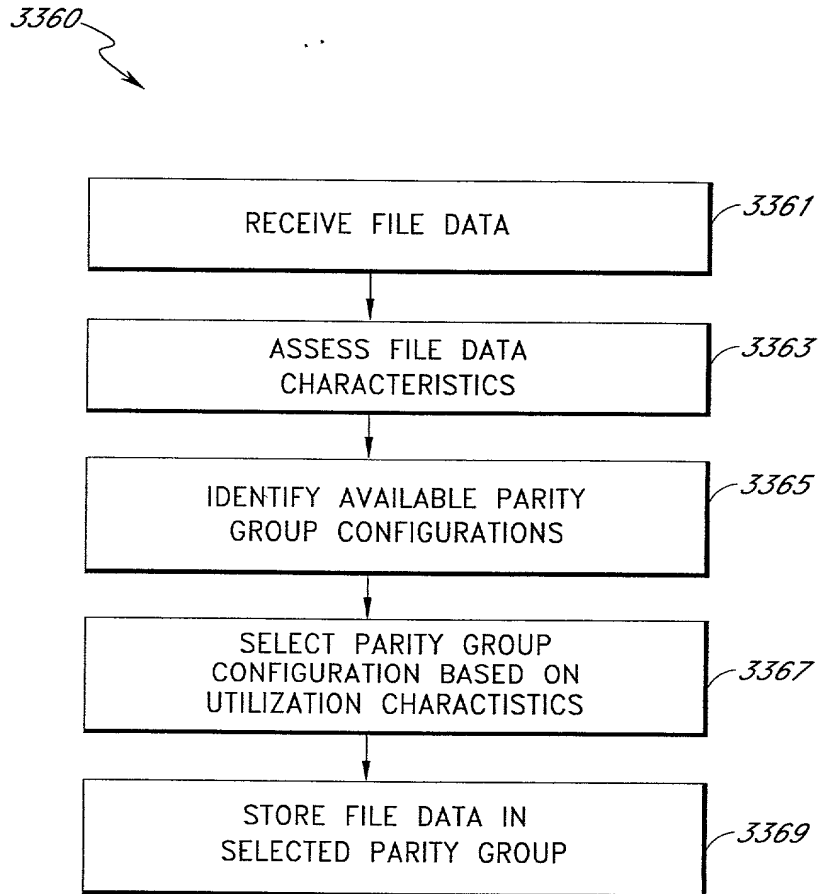



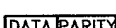


FIG. 32B



**FIG. 33**

**FIG. 34A**

INITIAL ALLOCATION			DISK SPACE%
	4 BLOCK PANITY	10000 GROUPS	36%
	3 BLOCK PANITY	10000 GROUPS	28%
	2 BLOCK PANITY	10000 GROUPS	22%
	1 BLOCK PANITY	10000 GROUPS	14%

**FIG. 34B**

		DISK USAGE			
		FREE	OCCUPIED	TOTAL	DISK SPACE%
3480	4 BLOCK PANITY	2500 GROUPS	7500 GROUPS	10000 GROUPS	36%
3481	3 BLOCK PANITY	7500 GROUPS	2500 GROUPS	10000 GROUPS	28%
3482	2 BLOCK PANITY	3500 GROUPS	6500 GROUPS	10000 GROUPS	22%
3483	1 BLOCK PANITY	500 GROUPS	9500 GROUPS	10000 GROUPS	14%

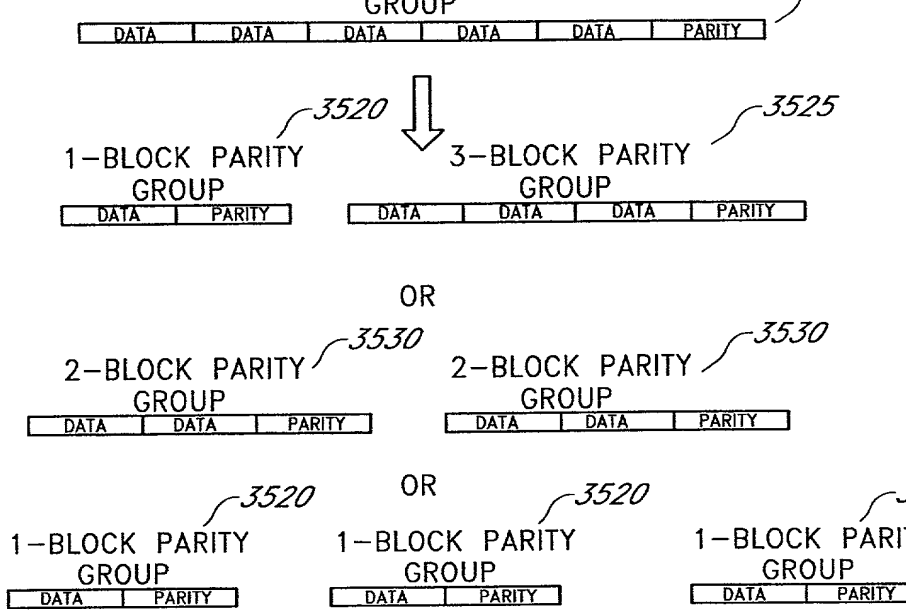
**FIG. 34C**

		REDISTRIBUTION			
		FREE	OCCUPIED	TOTAL	DISK SPACE%
3480	4 BLOCK PANITY	2500 GROUPS	7500 GROUPS	10000 GROUPS	36%
3481	3 BLOCK PANITY -5000 GROUPS OF 3 BLOCK PANITY	2500 groups	2500 GROUPS	5000 GROUPS	14%
3482	2 BLOCK PANITY +10000 GROUPS OF 1 BLOCK PANITY	3500 GROUPS	6500 GROUPS	10000 GROUPS	22%
3483	1 BLOCK PANITY	10500 GROUPS	9500 GROUPS	20000 GROUPS	28%

REDISTRIBUTION

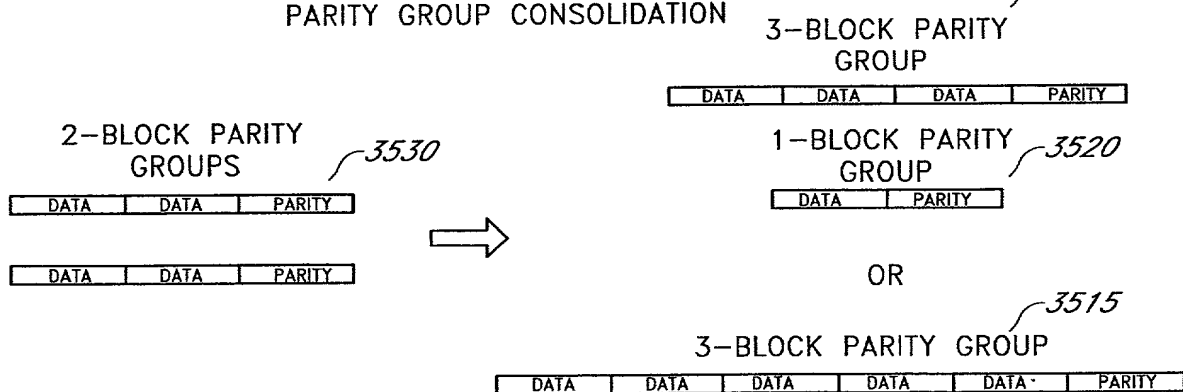
3510

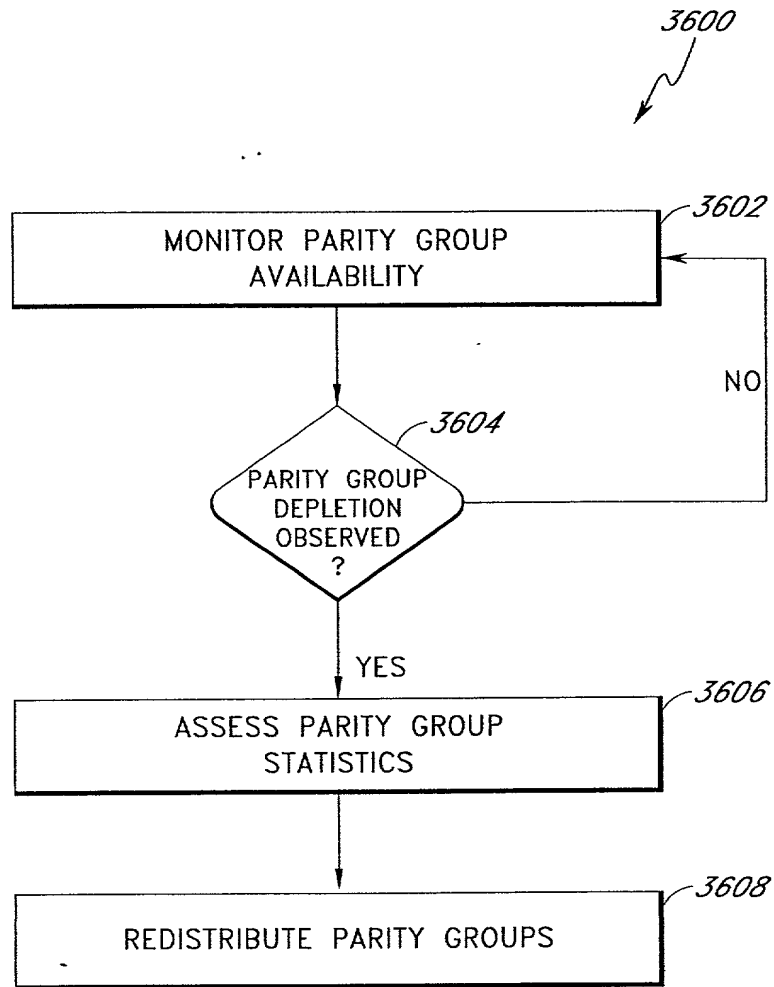
### 5-BLOCK PARITY GROUP



3535

3525



**FIG. 36**

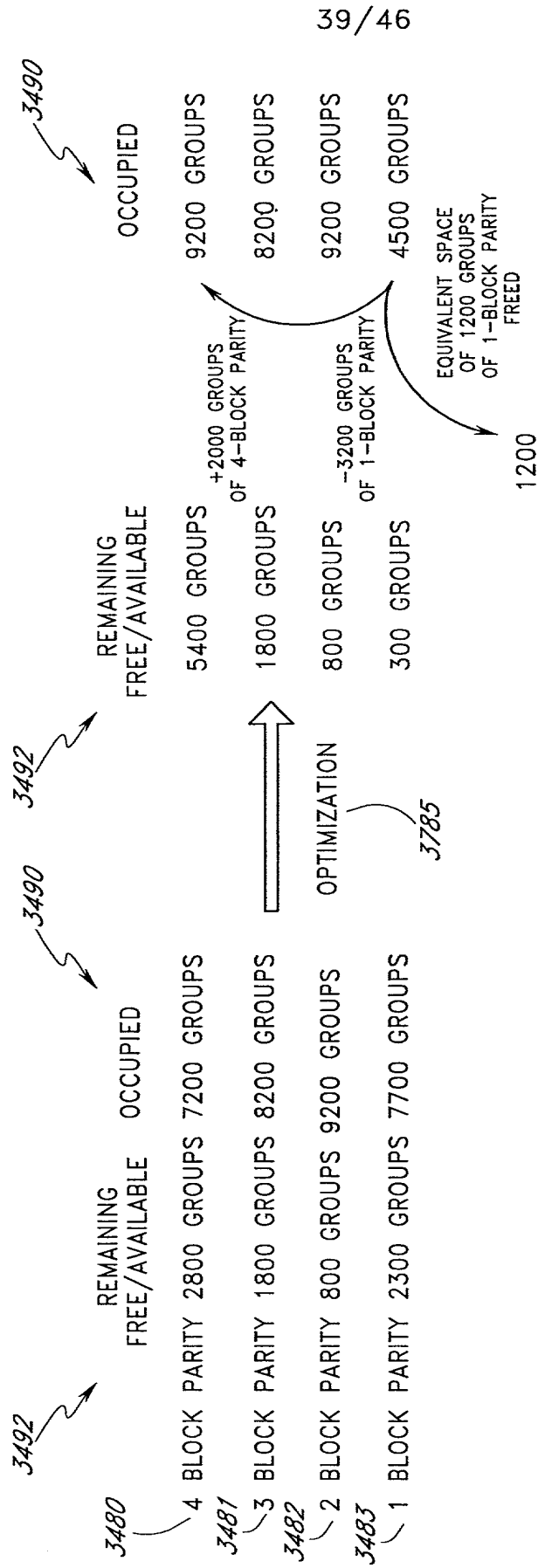
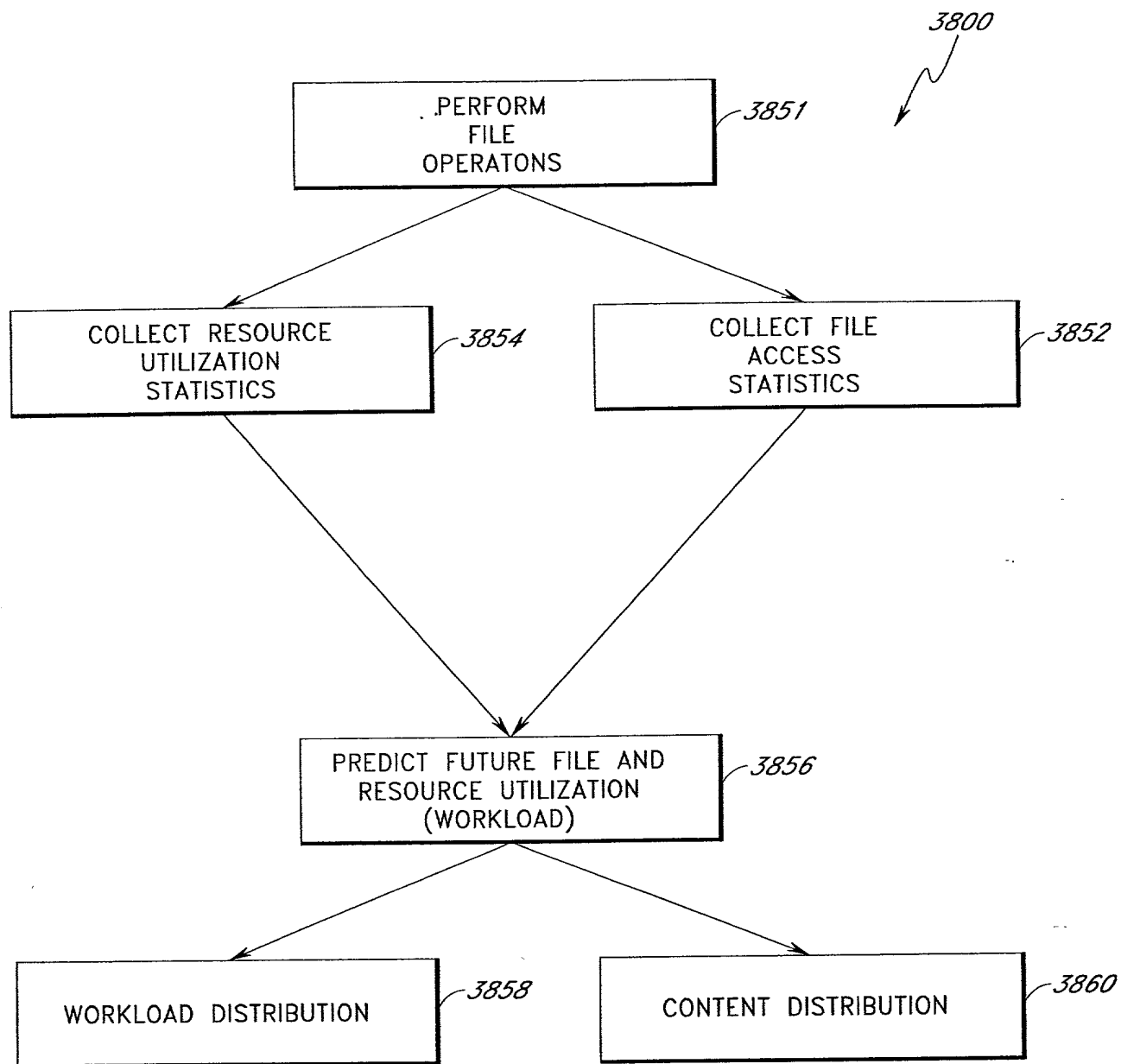


FIG.37

**FIG.38**



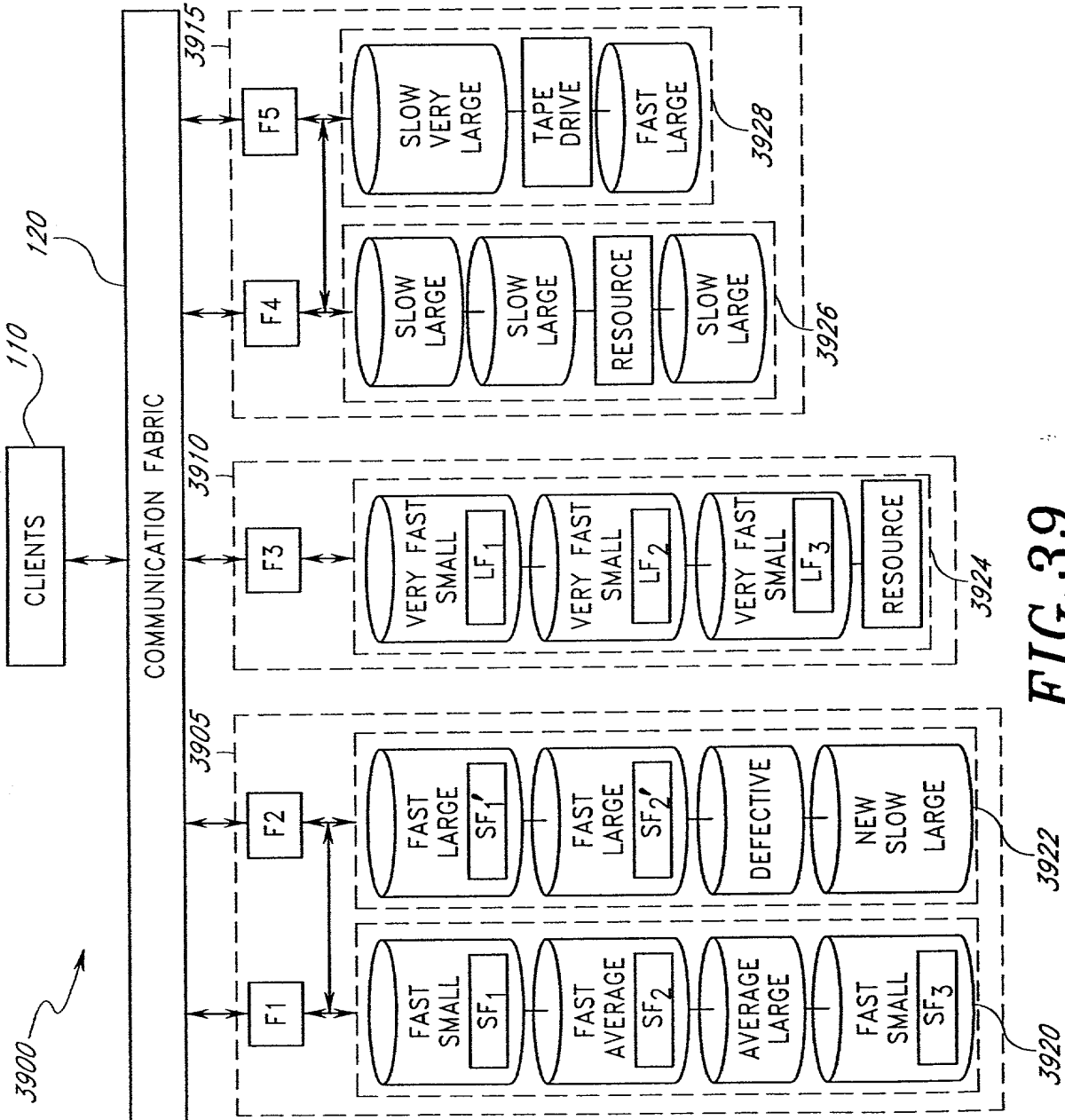


FIG. 39

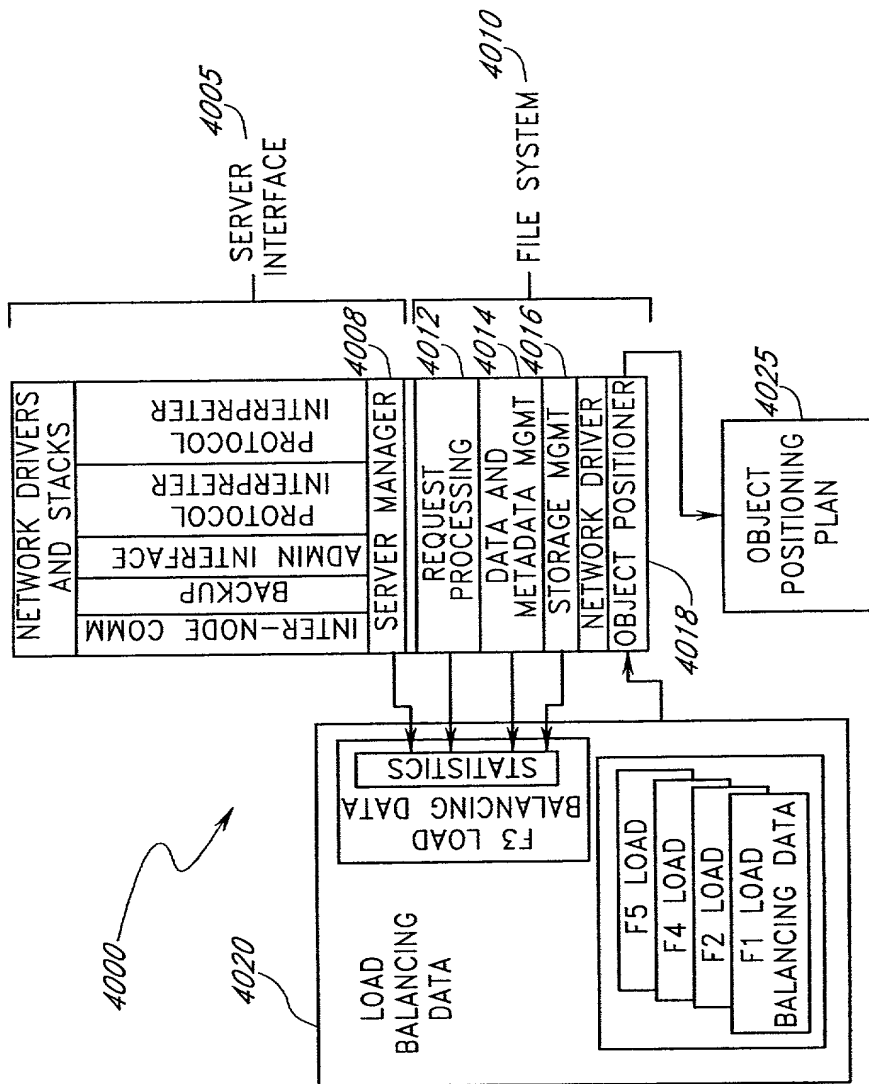
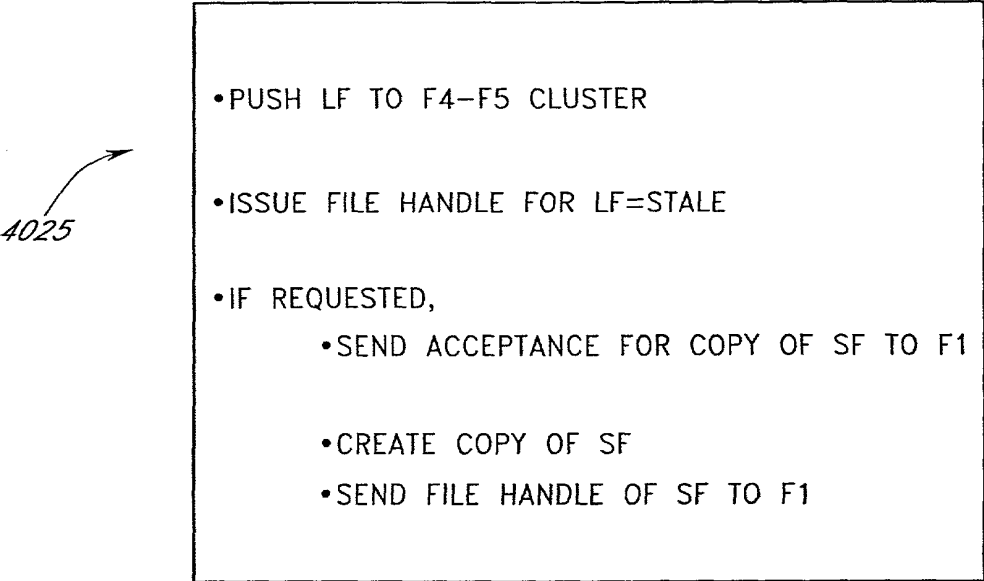


FIG. 40

### F3 OBJECT POSITIONING PLAN

- 
- PUSH LF TO F4-F5 CLUSTER
  - ISSUE FILE HANDLE FOR LF=STALE
  - IF REQUESTED,
    - SEND ACCEPTANCE FOR COPY OF SF TO F1
    - CREATE COPY OF SF
    - SEND FILE HANDLE OF SF TO F1

***FIG. 41***

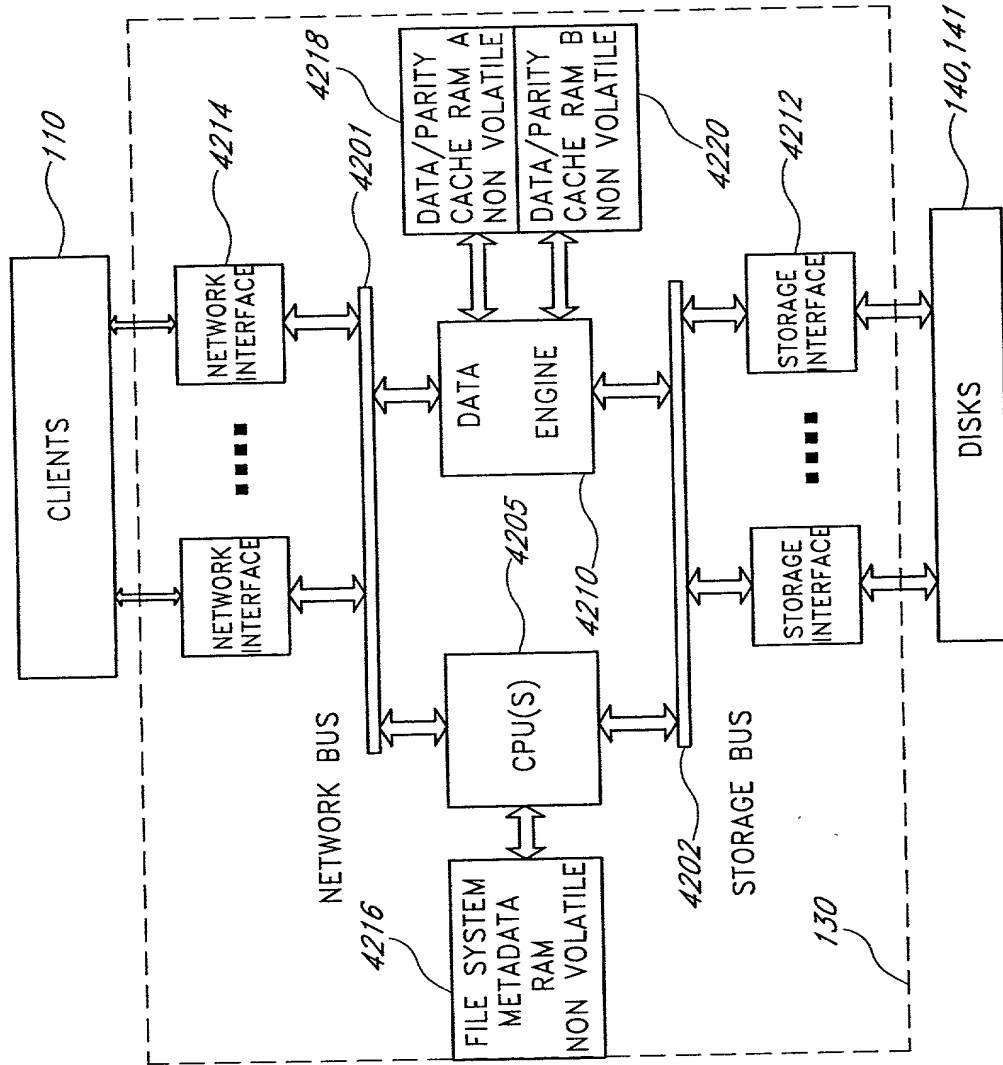


FIG. 42

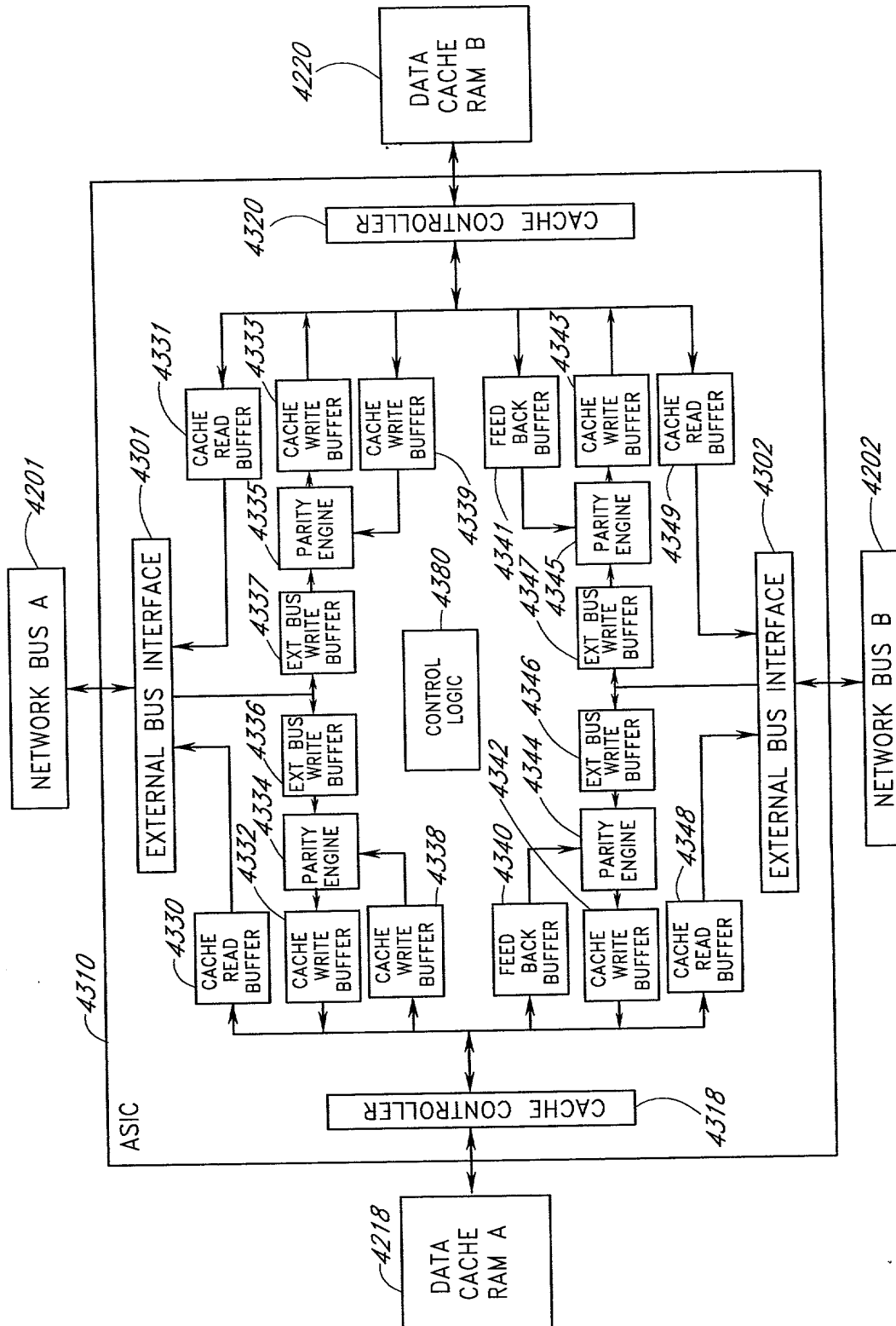


FIG. 43

PCI MAP	BLOCK SIZE	OPCODE	SPARE	PARITY INDEX	SPARE	RAM ADR
63.....	62,61.....	59,58.....	56,55.....	51,50.....	35,34,32, 31.....	.....0

4400

FIG.44